Service Man

Vol.

Summary **Technical Descriptions** Portable Video Cassette Recorder

Panasonic T



SPECIFICATIONS

Power Source:

12 VDC

Battery LCS-2012P Elec. Tuner Unit PV-A200 Prog. Tuner Unit PV-A500 Multiple AC Adaptor PV-A100 Plug-in AC Adaptor PV-A110

Power Consumption: Television System:

Approx. 7W at Play mode EIA Standard (525 lines, 60 fields)

NTSC color signal

Video Recording

System: 2 rotary heads helical scanning system

Luminance: FM azimuth recording Chrominance: Converted subcarrier phase shift recording

Audio Track:

1 track

Tape Format:

Tape width 1/2" (12.7 mm), high density

tape

Tape Speed:

SP mode: 1-5/16 i.p.s (33.35 mm/s) LP mode: 21/32 i.p.s (16.67 mm/s) SLP mode: 7/16 i.p.s (11.12 mm/s) Record/Playback Time: 360 min. with NV-T120 used in SLP

FF/REW Time:

mode Less than 6 min. with NV-T120

Video: 2 Rotary heads Audio/Control: 1 stationary head

Erase: 1 full track erase 1 audio track erase for audio

dubbing

Input Level:

Heads:

Video: VIDEO IN Jack (RCA type) $1.0\,\mathrm{Vp}$ -p, 75Ω unbalanced

Audio: MIC IN Jack

-70 dB, 600Ω unbalanced

Output Level:

Video: VIDEO OUT Jack (RCA type)

 $1.0\,\mathrm{Vp}$ -p, $75\,\Omega$ unbalanced

Audio: AUDIO OUT Jack (RCA type)

 $-6\,\mathrm{dB}$, 600Ω unbalanced RF Modulated: Ch3/Ch4 switchable,

72 dBμ (open voltage), 75Ω unbalanced

Video Horizontal

Resolution: More than 230 lines

Audio Frequency

Response: SP: 100 Hz ~ 8 kHz, (10 dB down) LP: 100 Hz ~ 6 kHz.

SLP: 150 Hz ~ 5 kHz

Signal-to-Noise Ratio: Video: SP mode: better than 40 dB

LP mode: better than 40 dB SLP mode: better than 40 dB (Rohde & Schwarz noise meter)

Audio: SP mode: better than 42dB LP mode: better than 40dB SLP mode: better than 40dB

Operating

Temperature: $32^{\circ}F \sim 104^{\circ}F (0^{\circ}C \sim 40^{\circ}C)$

Operating Humidity: 10% ~ 75%

Weight:

8.4 lbs (3.8 kg) (with internal battery pack) Dimensions: $9-3/8 \text{ "(W)} \times 3-5/8 \text{ "(H)} \times 9-9/16 \text{ "(D)}$

238(W) × 92.5(H) × 242(D) mm

Weight and dimensions shown are approximate. Specifications are subject to change without notice.

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Panasonic.

INTRODUCTION

This service manual contains information which will allow service technicians to understand and service the Panasonic compact and light weight portable VHS video recorder Models PV-5200 and PV-5500. These models consist basically of the PV-5000 Video Tape Recorder and various accessories to compliment the deck.

Some of the many special features include extended recording time of up to 6 hours, portability, soft touch function controls, SLP search, convenient 4 power source system (battery pack, the tuner unit, a car battery or the AC adaptor/Plug-in AC adaptor), minimal picture interference during add-on and insert recording, multimotion playback at your option, high speed battery charging, one touch recording with the tuner and a battery saving feature when the recorder is used with the great selection from the Panasonic Color Camera line.

In addition this deck features the simplified and reliable new tape loading method, a directly driven head cylinder and capstan servo motor, a one touch connection method to the tuner or AC adaptor and it is light weight and very compact.

These features in addition to the basic VHS format make the PV-5200/PV-5500 an ideal unit for your education, recreation and entertainment.

Just slightly ahead of our time......PANASONIC

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SYSTEM FEATURES

1. Compact and light weight

This truly compact and lightweight Video Cassette Recorder is the result of such developments as simplified construction, the reduction in size of various mechanical parts, and the use of ICs (integrated circuitry).

2. Six hour recording

New system for high-density recording allows up to 6 hours of recording on a single NV-T120 tape.

3. One touch connection

The Recorder can be connected to the Tuner, AC Adaptor or Car Battery Cord. (Use the adaptor-connection cord only.)

4. Multi-motion playback

In addition to playback at normal speed, you can operate multi-motion playback as follows. (For tapes recorded in SLP speed.)

SEARCH	forward and reverse at about 9 times normal speed
STILL-FRAME	to view a single scene
FINE-SLOW	for noiseless slow-motion
FRAME ADVANCE	to watch frame-by-frame playback

5. Fine-editing function

The Recorder eliminates the editing problem common to ordinary VCRs. When the pause is used during recording, the tape will automatically rewind slightly to reduce this break to a minimum of interference.

6. INSERT

The Recorder enables you to substitute your desired picture for a previously recorded tape at any segment.

7. Four way power

The Recorder can be operated with a Battery Pack, the Tuner unit, a car battery or the AC Adaptor/Plug-In AC Adaptor.

8. High speed charging

The AC Adaptor can charge for about 1.5 hour, and the Tuner can charge within 3 hours.

9. Watch one channel while recording another

The built-in tuner allows the recording of a program that you don't want to miss while watching another program.

10. Unattended recording

The Programmable Tuner/Timer enables you to preset the Portable Video Cassette Recorder to record a TV program while you are away for the day (with model PV-A200) or to record up to 4 programs within a period of 14 days (with model PV-A500).

11. One touch recording

The Tuner enables you to do impromptu timer recordings at any time. Just select the channel and push the One Touch Record Button for 30 minutes to 2 hours of recording.

12. Remote control

The 12 functions Wired Remote Control (supplied with PV-5000, PV-5200) provides:

REC, PLAY, STOP, FAST-FORWARD, REWIND, PAUSE/STILL, SEARCH <Forward, Reverse>, FRAME ADV, FINE-SLOW, SLOW SPEED <Up, Down>.

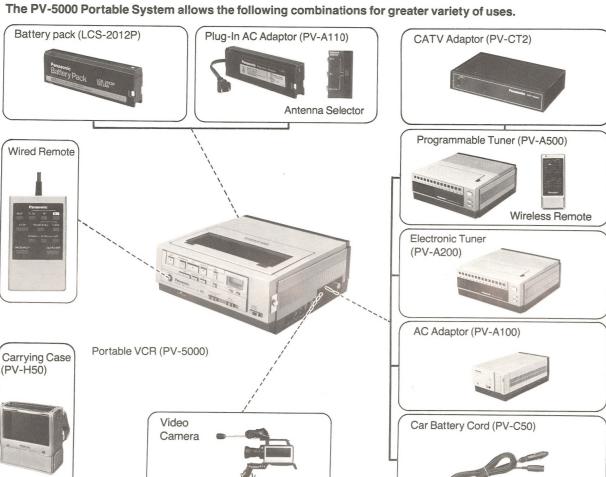
The 16 functions Wireless Remote Control (supplied with PV-5500, PV-A500) provides:

POWER, REC, PLAY, CHANNEL <Up, Down>, STOP, VCR/TV, FAST-FORWARD, REWIND, PAUSE/STILL, SEARCH <Forward, Reverse>, FRAME ADV, FINE-SLOW, SLOW SPEED <Up, Down>.

13. CABLE-READY

When used in cable systems, the extended range tuner allows reception of standard Mid-Band (Channels A–I) and Super-Band (Channels J–W) TV programs (with model PV-A500). However, reception of intentionally scrambled programs may require special equipment from your cable company.

PV-5000 PORTABLE SYSTEM



PV-5000 PORTABLE SYSTEM AND ACCESSORIES YOU CAN PURCHASE FOR YOUR MODEL

COMPONENTS	VCR	Wired Remote Control	PV-A500	PV-CT2	PV-A200	PV-A100	PV-A110	PV-C50	PV-H50	LCS-2012P
PV-5500	Included	Not Separately Available	Included	Optional	Optional	Optional	Optional	Optional	Optional	Included
PV-5200	Included	Included	Optional	Not Applicable	Included	Optional	Optional	Optional	Optional	Included
PV-5110	Included	Included	Optional	Not Applicable	Optional	Optional	Included	Optional	Optional	Included
PV-5000	Included	Included	Optional	Not Applicable	Optional	Optional	Optional	Optional	Optional	Included
Components Available A	As Optional A	ccessories	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

WARNING: ONE FEDERAL COURT HAS RULED TAHT IN-HOME RECORDING OF COPYRIGHTED TELEVISION PROGRAMS IS COPYRIGHT IN-FRINGEMENT. PURCHASERS SHOULD NOT RE-**CORD SUCH PROGRAMS.**

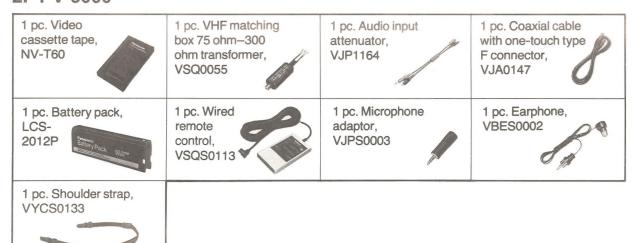
CAUTION: TO PREVENT FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

ACCESSARIES SUPPLIED

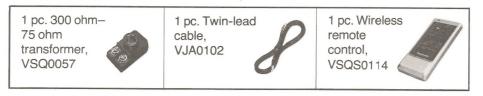
1. PV-5200 & PV-5500



2. PV-5000



3. PV-A500



4. PV-A200

1 pc. 300 ohm— 75 ohm transformer, VSQ0057



1 pc. Twin-lead cable, VJA0102



5. PV-A100

1 pc. 300 ohm— 75 ohm transformer, VSQ0057

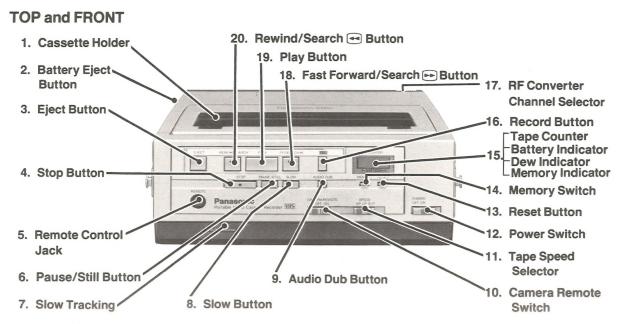


OTHER OPTIONAL ACCESSORIES

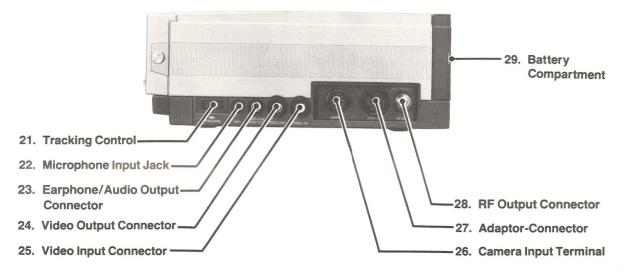
•1/2" video cassette tape: NV-T120 Approx. 810 ft. (247 m), 120, 240 or 360 min. NV-T60 Approx. 417 ft. (127 m), 60, 120 or 180 min.

System carrying case: PV-H55

CONTROLS AND COMPONENTS/PV-5000



SIDE VIEW



1. Cassette Holder

2. Battery Eject Button

To remove the Battery, press this button.

3. Eject Button

Press this button to insert or to remove cassette. It is not possible to eject the cassette while the tape is moving.

4. Stop Button

Press this button to stop the tape.

5. Remote Control Jack

For connecting the Wired Remote Control unit.

6. Pause/Still Button

Press this button to temporarily stop the tape movement in either the recording or playback mode. During SLP playback, a still-frame picture is produced when the pause is in use. Press again to release pause.

7. Slow Tracking

Tracking control for use with slow-motion.

8. Slow Button

Press this button for slow-motion playback of tapes recorded in SLP speed.

9. Audio Dub Button

When this button is pressed simultaneously with the Play Button during playback, sound from another source can be recorded on the tape in place of the original sound. (The original sound will be erased.)

10. Camera Remote Switch

When camera recording, this switch must be set to ON. Set it to OFF at other times.

11. Tape Speed Selector (SP/LP/SLP)

Set this selector depending upon the length of the program.

12. Power Switch

This switch is used to turn the VCR deck on and off.

13. Reset Button

Pressing this button causes the Tape Counter to return to "0000".

14. Memory Switch

When this switch is in the "ON" position, the tape will stop when the Tape Counter reaches "0000".

15. Tape Counter

By beginning the recording at "0000" subsequent playback will be more convenient.

Battery Indicator

This indicates the remaining battery charge.

Dew Indicator

If condensation occurs in the VCR, the Dew Indicator will flash on and off for 3 seconds when the VCR is turned on and the VCR will be turned off automatically. In this case, wait until the lamp no longer flashes when the Power Switch is turned on again.

Memory Indicator

"M" is indicated when the Memory Switch is ON.

16. Record Button

Recording is started by pressing this button and the Play Button at the same time.

17. RF Converter Channel Selector

Set to channel 3 or 4, whichever is not used in your area

18. Fast Forward/Search ▶▶ Button

Press this button to move the tape forward rapidly. During the play mode pressing this button will allow you to view the tape in the forward direction at about 9 times the recorded tape speed (recorded at SLP speed).

19. Play Button

Press this button to play back recorded tapes.

20. Rewind/Search ■ Button

Press this button to rewind tapes. During the play mode pressing this button will allow you to view the tape in reverse at about 9 times the recorded tape speed (recorded at SLP speed).

21. Tracking Control

Use this control during playback if the image is partially obscured by bands of noise.

22. Microphone Input Jack

For connecting a MIC Adaptor or Audio Input (Attenuator (included). This is useful for recording and audio dubbing.

23. Earphone/Audio Output Connector

For connection to a monitor TV, another VCR, audio tape recorder or earphone.

24. Video Output Connector

For connection to a monitor TV or another VCR.

25. Video Input Connector

For connection from another VCR.

26. Camera Input Terminal

For connection of a portable video camera (optional).

27. Adaptor-Connector

This can be used to connect the Recorder to the Tuner, the AC Adaptor or the Car Battery Cord with a single connection.

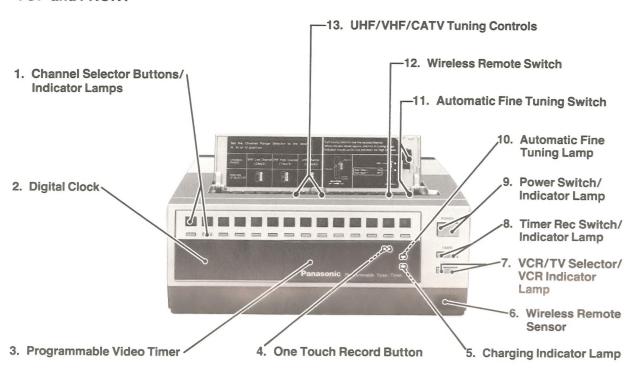
28. RF Output Connector

For connection to a TV. This connector is the signal output connector from the RF Convertor (Channel 3 or 4).

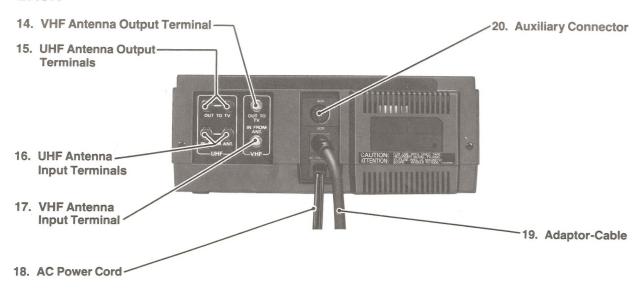
29. Battery Compartment

CONTROLS AND COMPONENTS/PV-A500

TOP and FRONT



BACK



1. Channel Selector Buttons/Indicator Lamps

Select the channels (2–83, A–W) you wish to view or record by pressing any one of these 14 buttons.

2. Digital Clock

3. Programmable Video Timer

Use this timer to make an unattended recording when you are away from home, busy or asleep.

4. One Touch Record (O.T.R.) Button

One Touch Recording enables you to do impromptu recordings at any time. Just select the channel and push the One Touch Record Button for 30 minutes to 2 hours of recording.

5. Charging Indicator Lamp

Lights up when battery is being charged. When the charging has been completed, this lamp will go off.

6. Wireless Remote Sensor

Receives signal from Wireless Remote Control.

7. VCR/TV Selector/VCR Indicator Lamp

VCR: Push this button once to monitor video

recording or to view playback.

TV: Push this button again to watch TV, or to view another program while recording a

different program.

The Lamp lights up when the VCR/TV Selector is in the VCR position.

8. Timer Rec Switch/Indicator Lamp

This switch is used for unattended recording after programming functions have been completed. When this switch is ON, the Indicator Lamp lights up and you will not be able to operate the unit manually.

9. Power Switch/Indicator Lamp

This switch is used to turn the Tuner unit power ON and OFF.

10. Automatic Fine Tuning (AFT) Lamp

The Lamp lights up to indicate that the Automatic Fine Tuning is activated.

11. Automatic Fine Tuning (AFT) Switch

Under normal conditions turn the AFT switch "ON". When the Tuning Control Panel door is opened the AFT circuit is defeated (AFT Lamp turns OFF). Turn the AFT "ON" or close the Tuning Control Panel door (AFT Lamp turns "ON") to activate the AFT.

12. Wireless Remote Switch

This switch determines whether the Wireless Remote Control can be received or not.

13. UHF/VHF/CATV Tuning Controls

There are fourteen positions available (fourteen buttons) and each one can be tuned to any channel you desire.

14. VHF Antenna Output Terminal (To TV Set)

Connect this terminal to the VHF antenna terminal on the TV.

15. UHF Antenna Output Terminals (To TV Set)

Connect these terminals to the UHF antenna terminals on the TV.

16. UHF Antenna Input Terminals (From Antenna)

Connect the UHF antenna to these terminals.

17. VHF Antenna Input Terminal (From Antenna or CABLE)

Connect the VHF antenna or CABLE to this terminal.

18. AC Power Cord

Connect to a 120 V AC outlet.

19. Adaptor-Cable

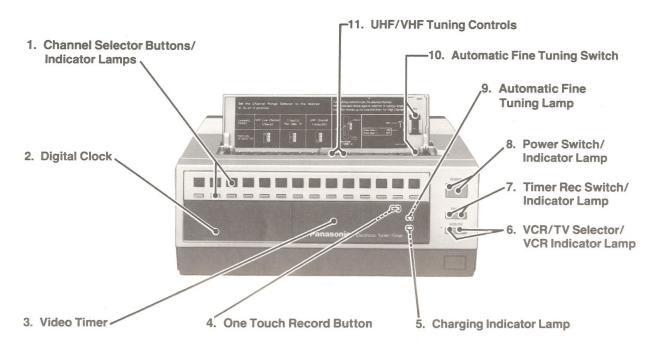
Connect to the Adaptor-Connector of the Recorder.

20. Auxiliary Connector

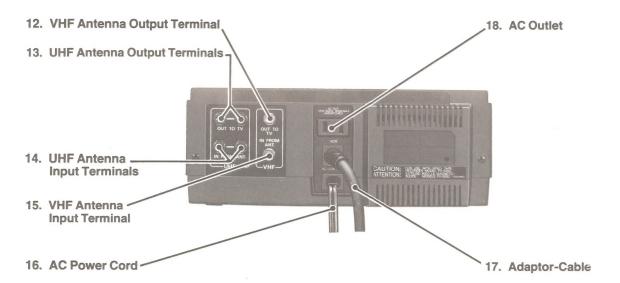
Connect the VCR Remote Control Cord of the CATV Adaptor/PV-CT2 (optional) to this connector. Using the CATV Adaptor and the Cable Descrambler Box, all functions (e.g. Timer Recording, Recording one channel while watching another) are operable even for both regular TV channels and one pay TV channel. Refer to the Operating Instructions of the PV-CT2.

CONTROLS AND COMPONENTS/PV-A200

TOP and FRONT



BACK



Channel Selector Buttons/Indicator Lamps Select the channels (2–83) you wish to view or

record by pressing any one of these 14 buttons.

2. Digital Clock

3. Video Timer

Use this timer to make an unattended recording when you are away from home, busy or asleep.

4. One Touch Record (O.T.R.) Button

One Touch Recording enables you to do impromptu recordings at any time. Just select the channel and push the One Touch Record Button for 30 minutes to 2 hours of recording.

5. Charging Indicator Lamp

Lights up when battery is being charged. When the charging has been completed, this lamp will go off.

6. VCR/TV Selector/VCR Indicator Lamp

VCR: Set to 'button in' position to monitor video recording or to view playback.

TV: Set to 'button out' position to watch TV, or to view one program while recording a different program.

The Lamp lights up when the VCR/TV Selector is set in the VCR position.

7. Timer Rec Switch/Indicator Lamp

This switch is used for unattended recording after programming functions have been completed. When this switch is ON, the Indicator Lamp lights up and you will not be able to operate the unit manually.

8. Power Switch/Indicator Lamp

This switch is used to turn the Tuner unit power ON and OFF.

9. Automatic Fine Tuning (AFT) Lamp

Lights up to indicate that Automatic Fine Tuning is activated.

10. Automatic Fine Tuning (AFT) Switch

Under normal conditions turn the AFT switch "ON". When the Tuning Control Panel door is opened the AFT circuit is defeated (AFT Lamp turns OFF). Turn the AFT "ON" or close the Tuning Control Panel door (AFT Lamp turns "ON") to activate the AFT.

11. UHF/VHF Tuning Controls

There are fourteen positions available (fourteen buttons) and each one can be tuned to any UHF/VHF channel you desire.

12. VHF Antenna Output Terminal (To TV Set)

Connect this terminal to the VHF antenna terminal on the TV.

13. UHF Antenna Output Terminals (To TV Set)

Connect these terminals to the UHF antenna terminals on the TV.

14. UHF Antenna Input Terminals (From Antenna)

Connect the UHF antenna to these terminals.

15. VHF Antenna Input Terminal (From Antenna)

Connect the VHF antenna to this terminal.

16. AC Power Cord

Connect to a 120 V AC outlet.

17. Adaptor-Cable

Connect to the Adaptor-Connector of the Recorder.

18. AC Outlet

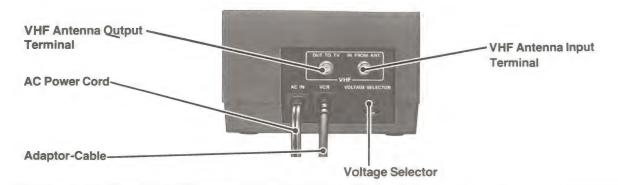
Convenience outlet for another appliance, such as a television etc., 120 V AC and not more than 300 watts

CONTROLS AND COMPONENTS/PV-A100, PV-A110

TOP and FRONT of PV-A100 (AC ADAPTOR)



BACK



CAUTION: The Selector has been set at the factory to 120 V AC (standard in the U.S.A. and Canada). If you will be using this Adaptor in a country with different voltage (100 V, 220 V, 240 V), you must adjust the Voltage Selector. To adjust, unplug this Adaptor from the wall outlet, using a small screwdriver, turn the Voltage Selector until the appropriate voltage number appears in the window.

S	ETTING TH	IE VOLTAG	E SELECTO	OR
LOCAL VOLTAGE	AC 100 V	AC 120 V	AC 220 V	AC 240 V

CAUTION: Operation at a voltage setting 100/220/240 V AC may require the use of a different AC plug. Please contact either a local or foreign electrical parts distributor for assistance in selecting an alternate AC plug.

PV-A110 (PLUG-IN AC ADAPTOR)



VHS-PRINCIPLE OF OPERATION

Basic Video Tape Recording

To understand the VHS format, it is wise to first review the basic principles of video tape recording.

Like audio tape recording, video information is stored on magnetic tape by means of a small electromagnet, or head. The two poles of the head are brought very close together but they do not touch. This creates magnetic flux to extend across the separation (gap), as shown: Fig. 1.

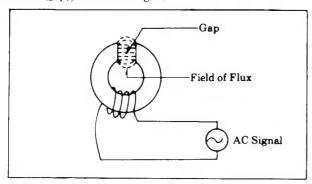


Fig. 1.

If an AC signal is applied to the coil of the head, the field of flux will expand and collapse according to the rise and fall of the AC signal.

When the AC signal reverses polarity, the field of flux will be oriented in the opposite direction and will also expand and collapse.

This changing field of flux is what accomplishes the magnetic recording. If this flux is brought near a magnetic material, it will become magnetized according to the intensity and orientation of the field of flux. The magnetic material used is oxide coated (magnetic) tape.

Using audio tape recording as an example, if the tape is not moved across the head, just one spot on the tape will be magnetized and will be continually re-magnetized. If the tape is moved across the tape, specific areas of the tape will be magnetized according to the field of flux at any specific moment. A length of recorded tape will therefore have on it areas of magnetization representing the direction and intensity of the field of flux. For instance:

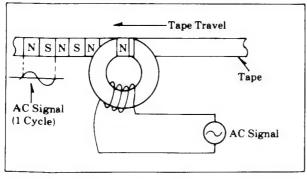


Fig. 2.

The tape will have differently magnetized regions, which can be called North (N) and South (S), according to the AC signal. When the polarity of the AC signal changes, so does the direction of magnetization on the tape, as shown by one cycle on the AC signal (see Fig. 2). If the recorded tape is then moved past a head whose coil is connected to an amplifier, the regions of magnetization on the tape will set up flux across the head gap which will in turn induce a voltage in the coil to be amplified. The output of the amplifier, then is the same as the original AC signal. This is essentially what is done in audio recording, with other methods for improvement like bias and equalization.

There are some inherent limitations in the tape recording process which do effect video tape recording, so they will be examined now.

As shown in Fig. 2, the tape has North and South magnetic fields which change according to the polarity of the AC signal. What if the frequency of the AC signal were to greatly increase?

If the speed of the tape past the head (head to tape speed) is kept the same, the changing polarity of the high frequency AC signal would not be faithfully recorded on the tape, as shown in Fig. 3.

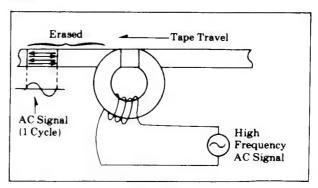


Fig. 3.

As the high frequency AC signal starts to go positive, the tape will start to be magnetized in one direction. But the AC signal will very quickly change its polarity, and this will be recorded on much of THE SAME PORTION of the tape, so North magnetic regions will be covered by South magnetic regions and vice versa. This results in zero signal on the tape, or self-erasing. To keep the North and Sough regions separate, the head to tape speed must be increased. (See Fig. 3.)

When recording video, frequencies in excess of 4 MHz may be encountered. Through experience, it is found that the head to tape speed must be in the region of 10 meters per second in order to record video signals.

The figure of 10 meters per second was also influenced by the size of the head gap. Clearly, the lower the head to tape speed, the easier it is to control that speed. If changes in head gap size were not made, the necessary head to tape speed would have been considerably higher. How the gap size influences this can be explained by Fig. 4.

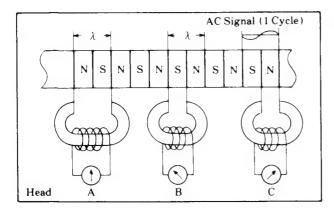


Fig. 4.

Assume a signal is already recorded on the tape. The distance on the tape required to record one full AC signal cycle is called the RECORDED WAVELENGTH or λ . Head A has a gap width equal to λ . Here, there is both North and South oriented magnetization across the gap.

This produces a net output of zero since North and South cancel. Head B and C have a maximum output because there is just one magnetic orientation across their gaps.

Maximum output occurs in heads B and C therefore, because their gap width is $1/2\lambda$. (Heads B and C would also work if their gap width is less than $1/2\lambda$.) The same is also true for recording. The maximum useable (no self-erasing) transfer of magnetic energy to the tape occurs when the gap width, G, can be expressed as.

$$G \le \frac{\lambda}{2}$$

The RECORDING WAVELENGTH, can be expressed as:

 $\lambda = \frac{V}{f}$ where V is the head to tape speed and f is the frequencies to be recorded.

So, $G \subseteq \frac{V}{2f}$, as V increases, G is also allowed to increase for the same MAXIMUM frequency. Conversely if G is made very small, V is allowed to be reduced.

In practice, G can be made as small as (and smaller than) 1μ m (1 X 10^{-6} meters) and this puts V in the area of 10 meters per second.

A head to tape speed of 10 meters per second is a very high speed, too high in fact to be handled accurately by a reel to reel tape machine of reasonable size. Also, tape consumption on a high speed reel to reel machine is tremendous.

The method employed in video recording is to move the video heads as well as the tape. If the heads are made to move fast, across the tape, the linear tape speed can be kept very low.

In 2-head helical video recording (the only format which will be discussed here) the video heads are mounted in a rotating drum or cylinder, and the tape is wrapped around the cylinder. This way, the heads can scan the tape as it moves. When a head scans the tape, it is said to have made a TRACK. This can be seen in Fig. 5.

In 2-head helical format, each head, as it scans across the tape will record one TV field, or 262.5 horizontal lines. Therefore, each head must scan the tape 30 times per second to give a field rate of 60 fields per second.

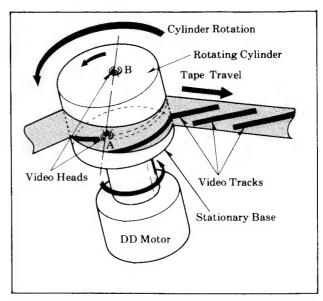


Fig. 5.

The tape is shown as a screen wrapped around the head cylinder to make it easy to see the video head. There is a second video head 180° from the head shown in front. Because the wraps around the cylinder in the shape of a helix (helica) the video tracks are made as a series of slanted lines. Of course, the tracks are invisible, but it is easier to visualize them as line. The two heads "A" and "B" make alternate scans of the tape.

An enlarged view of the Video tracks on the tape can be shown: Fig. 6

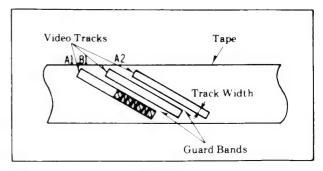


Fig. 6.

Refer to Fig. 6. The video tracks are the areas of the tape where video recording actually takes place. The guard bands are blank areas between tracks, preventing the adjacent track's crosstalk from appearing on the track where the video head is tracking.

There is one more point about video recording which will be discussed here. Magnetic heads have the characteristic of increased output level as the frequency increases. Then, as determined by the gap width, the maximum output occurs at

approximately
$$G = \frac{V}{2f}$$

In practice, the lower frequency output of the heads is boosted in level to equal the level of the higher frequencies. This process, as also used in audio applications, is called equalization.

Video frequencies span from DC to about 4 MHz. This represents a frequency range of about 18 octaves. 18 octaves is too far a spread to be handled in one system (one machine). For instance, heads designed for operation at a maximum frequency of 4 MHz will have very low output at low frequencies. Since there is 6 dB/octave attenuation, 18x6=108 dB difference appears. In practice this difference is too great to be adequately equalized. To get around this, the video signal is applied to an FM modulator during recording. This modulator will change its frequency according to the instantaneous level of the video signal.

The energy of the FM signal lies chiefly in the area from about 1 MHz to 8 MHz, just three octaves. Heads designed for use at 8 MHz can still be used at 1MHz, because the output signal can be equalized. Actually speaking, heads are designed for use up to about 5 MHz. Therefore, some FM energy is lacked but it does not affect the playback video signal, because it is resumed in the playback process.

Upon playback, the recovered FM signal must be equalized then demodulated to obtain the video signal.

CONVERTED SUBCARRIER DIRECT RECORDING METHOD

The one method of color video recording that will be discussed here is the converted subcarrier method. In order to avoid visible beats in the picture caused by the interaction of the color (chrominance) and brightness (luminance) signals, the first step in the converted subcarrier method is to separate the chrominance and luminance portions of the video signal to be recorded. The luminance signal, containing frequencies from DC to about 4 MHz, is then FM recorded, as previously described. The chrominance portion, containing frequencies in the area of 3.58 MHz is down-converted in frequency in the area of 629 kHz. Since there is not a large shift from the center frequency of 629 kHz, this converted chrominance signal is able to be recorded directly on the tape. Also note that the frequencies in the area of 629 kHz are still high enough to allow equalized playback. In practice, the CONVERTED CHROMINANCE signal and the FM signals are mixed and then simultaneously applied to the tape. Upon playback, the FM and converted chrominance signals are separated. The FM is demodulated into a luminance signal again. The converted chrominance signal is reconverted back up in frequency area of 3.58 MHz. The chrominance and luminance signals are combined which reproduces the original video signal.

1. VIDEO HEAD

A. The Need for New Video Heads

We have already discussed the reduced track width. This reduction requires the use of a smaller video head. Just making them smaller does not make them better. With less of actual head material to work with, the magnetic properties of the head suffers. To offset this a change in the head material is in order. Because the VHS recorder is designed to be small, a reduction in the size of the head cylinder was called for.

A reduction in the size (diameter) of the head cylinder changes the head to tape speed. Remember, the head to tape speed affects the high frequency recording capability of the head.

To offset this problem, the head gap size was reduced. As is well-known. Azimuth Recording is utilized in VHS. The heart of the Azimuth Recording process is in the video heads themselves. This requires still another change in head design.

B. Head Gap

1. Width

As explained, the need for smaller head gap size became apparent. In VHS, the video heads have gap widths of a mere $0.3\mu m$ (0.3×10^{-6} meters).

This is quite a contrast with ordinary video heads used in other helical applications whose gap widths are typically in the area of $1\mu m$.

2. Azimuth

Azimuth is the term used to define the left to right tilt of the gap if the head could be viewed straight on. In previous VTR applications the azimuth was always set to be perpendicular to the direction of the head travel across the tape, or more simply, the video track. Fig. 7 helps explain this.

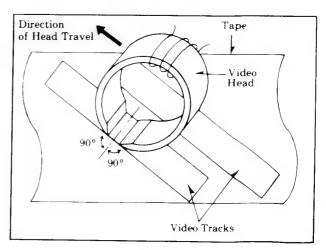


Fig. 7.

Fig. 7 shows that the gap is perpendicular to (90°) the head's movement across the tape. We can think of this standard as a perfect azimuth of 0° .

In VHS, the video heads have a gap azimuth other than 0°. And more, one head has a different azimuth from the other. The 2 values used in VHS are azimuth of +6° and -6°. Refer to Fig. 8 and Fig. 9.

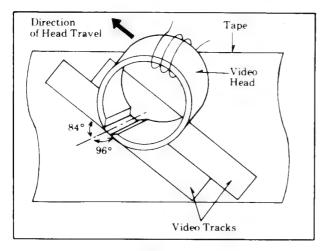


Fig. 8.

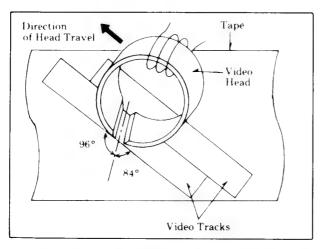


Fig. 9.

These heads make the VHS format different from most other VTR formats. Exactly how the azimuths of $\pm 6^{\circ}$ helps to keep out adjacent track interference is explained next.

2. AZIMUTH RECORDING

Azimuth Recording is used in VHS to eliminate the interference or crosstalk picked up by a video head. Again, because adjacent video tracks touch, or crosstalk, a video head when scanning a track will pick up some information from the adjacent track. The azimuths of the head gaps assure that video head "A" will only give an output when scanning across a track made by head "A". Head "B", therefore, only gives an output when scanning across a track made by head "B". Because of the azimuth effect, a particular video head will not pick up any crosstalk from an adjacent track. Let's examine this more closely.

In Fig. 10, we can see the VHS/SLP for example, video tracks with not-to-scale North and South magnetized regions on them.

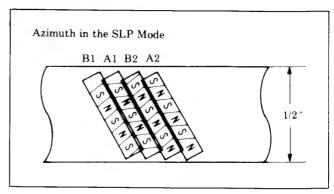


Fig. 10.

It can also be seen that these N or S regions are not perpendicular to the track, they have -6° azimuth in tracks A1, A2; and +6° azimuth in tracks B1, B2.

If we take track A1 and darken the N regions, it becomes easier to see. Refer to Fig. 11.

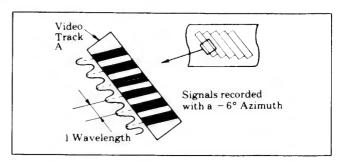


Fig. 11.

In Fig. 12, we see the information on track A, made by head "A". Imagine now that head "A" is going to playback this track, by superimposing the head over the track. Clearly, the gap fits exactly over the N and S regions, so that at any moment there is either an N region or an S region or an N to S (or S to N) transition across the gap. This produces maximum output in head 'A'. Now, visually superimpose the "B" head over the track.

Here there are N and S regions across the gap at the same time, at any given moment. Remember that simultaneous N and S regions across the gap cause cancellation, and therefore no output. Looking at Fig. 9, we can see that the gap width is equal to 1/2 the recorded wavelength. Recall that this occurs at the highest frequency which is to be recorded.

So therefore, the azimuth effect works at these high frequencies.

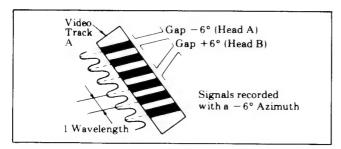


Fig. 12.

But what happens at lower frequencies? In Fig. 13, we see a diagram similar to Fig. 12, except the recorded wavelength is longer, which represents a lower frequency.

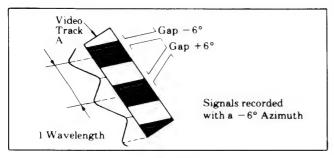


Fig. 13.

Again, visually superimpose the heads over the track. Head "A" is the same as before. But look at head "B". There is much less cancellation across the gap, and its output is close to that of head "A". Therefore, we see where the azimuth effect is dependent on frequency. The higher the frequency, the better the azimuth effect. The lower the frequency, the lower the separation by azimuth effect.

3. VHS COLOR RECORDING SYSTEM

Because there is insignificant azimuth effect at lower frequencies, a new color recording system must be adopted. The fact that crosstalk occurs at lower frequencies cannot be changed, this happens right at the tape during playback. The method adopted processes the crosstalk component signals from the heads so that they are eliminated. It is important to realize that the crosstalk DOES STILL OCCUR. It is the recording/playback circuitry that performs the elimination.

In ordinary Helical VTR's using converted subcarrier direct recording, the phase of the chrominance signal is untouched, recorded directly onto the tape. The chrominance signal and its phase can be represented by vectors. Vectors graphically represent the amplitude and phase of ONE frequency. In this discussion, we will consider (for simplicity) the chrominance signal to be of one frequency. As an example of vectors, see Fig. 14.

The length of any vector represents its amplitude.

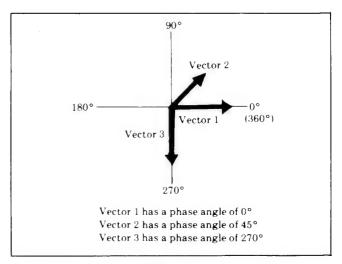


Fig. 14.

We know that the azimuth effect will not work at the lower frequencies. And since the color information in VHS is recorded at low-converted frequencies, a new method of color recording was adopted.

Vector Rotation in Recording is actually a phase shift process that occurs at a horizontal rate, 15,734Hz.

The chrominance signal can be represented by a vector, showing amplitude and phase. (\blacktriangle)

In ordinary Helical Scan VTR's the vector is of the same phase for every horizontal line, on every track as shown in Fig. 15.

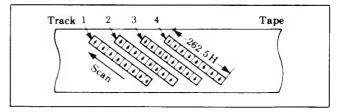


Fig. 15.

In VHS, we still convert the 3.58 MHz down to a lower frequency, namely 629 kHz, but the new color method used in VHS format is a process of vector rotation. During recording the CHROMINANCE phase of each horizontal line is shifted by 90°.

For head "A" (CHANNEL 1) we ADVANCE the CHROMINANCE phase by 90° per horizontal line (H).

For head "B" (CHANNEL 2) we DELAY the chrominance phase 90° per H.

VECTOR (PHASE) ROTATION:

CHANNEL 1 $+90^{\circ}/H$

CHANNEL 2 -90°/H

Fig. 16 shows what this looks like on tape.

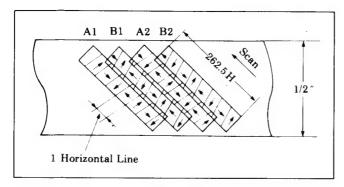


Fig. 16.

Now assume that head "A" plays back over track A1 it will produce a vector output as such:

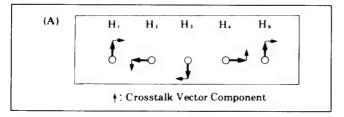


Fig. 17.

Head "A" when tracking over A1 will have an output consisting of the main signal (large vectors) and some crosstalk components (small vectors).

Fig. 17, then is a vector representation of the playback chrominance signal from the head.

One of the most important things down in the playback process is the restoration of the vectors to their original phase. This is done by the balanced modulator in the playback process.

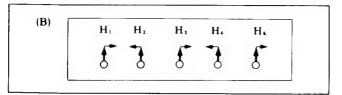


Fig. 18.

This restored signal is then split 2 ways. One path goes to one input of an adder. The other path goes to a delay line which delays the signal by 1 H. The output of the delay line goes to the other input of the adder. Fig. 19 explains.

As can be seen in Fig. 21, the crosstalk component has been eliminated after the first H line. We have now a chrominance signal free of adjacent channel crosstalk.

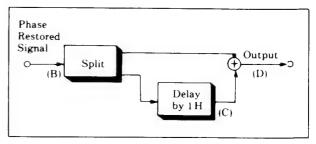


Fig. 19.

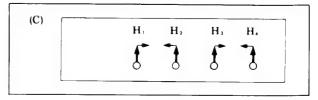


Fig. 20.

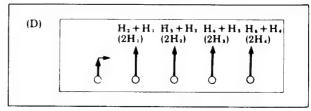


Fig. 21.

The double output in Fig. 21 is not a problem because it can always be reduced. The process of adding a delayed line to an undelayed line is permissable because any 2 adjacent lines in a field contain nearly the same chrominance information.

So, if 2 adjacent lines are added, the net result will produce no distortion in the playback picture.

In conjunction with the crosstalk elimination is the reconversion of the chrominance 629 kHz to its original 3.58 MHz. Now the color signal is totally restored.

GLOSSARY OF TERMS

ACC

Automatic Color Control used to maintain an overall constant color signal level in the color circuits.

ACK

Automatic Color Killer.

Adjacent Track

This is the name of the video track to the immediate left or right of the track of concern.

AFC

Automatic Frequency Control used to phase-lock the color circuits to either the recording or playback color signal, in order to achieve a stable color signal.

AFT

Automatic Fine Tuning... This is a special circuit found in most recent TV sets which makes the local oscillator of the TV tuner follow the channel of concern in order to produce a stable IF frequency. In other words, if for any reason the TV station being received changes frequency, the AFT circuit will automatically compensate so that no interference will be seen on the screen, i.e., no manual fine tuning is necessary.

AGC

Automatic Gain Control used to maintain an overall constant picture level in the luminance circuits.

APC

Automatic Phase Control used to help phase lock the color circuits to either the recording or playback color signal in order to achieve a stable color signal.

Azimuth

A term used to describe the left to right tilt of the gap of a recording head, if it could be viewed straight on.

Balanced Modulator

A circuit so designed to give as an output the frequency sum or frequency difference of its two input signals. Any special characteristics of one of the input signals will be present in the output signal.

Beats

A term used to described the unwanted signals produced when two original signals are allowed to be mixed together.

Bipolar PG

Pulse Generator signals that have both positive and negative excursions.

Burst

A short time occurence (8 to 10 cycles) of the 3.58 MHz subcarrier signal, appearing right after horizontal sync but centered on the blanking portion of the video waveform. Burst is used to keep the color oscillator of a TV receiver locked to the broadcast station.

B/W

Abbreviation for Black and White.

C

Capacitor.

C Signal

The color portion of a video signal.

Capstan

A small rotating metal dowel which drives the recording tape to assure positive tape movement.

Chroma

The color portion of a video signal.

Chrominance

The color portion of a video signal,

Clamp

The process of giving an AC signal a specific DC level.

Control Signal

A special signal recorded onto the video tape which is used during playback as a reference for the servo circuits.

Converted Subcarrier

This is the process of frequency shifting the color 3.58 MHz subcarrier and its sidebands down to 629 kHz.

Crosstalk

The name given to the unwanted signals obtained when a video head picks up information from an adjacent track.

CUE

To scan the playback picture at a faster than normal speed in the Forward direction.

D

Diodė.

DL

Delay Line.

DDC

Direct Drive Cylinder...as used in VHS, this means that the video heads are driven by a self-contained brushless DC motor using no belts or gears. DD cylinders produce pictures with better stability.

Dark Clip

After emphasis, the negative going spikes (undershoot) of a video signal may be too large in amplitude for safe FM modulation. A dark clip circuit is used to cut off these spikes at an adjustable level.

Delta Factor (Δf)

A term used to indicate that a playback signal off the video tape has some jitter or "wow and flutter". Δf , or "a change in frequency" means that the color signal off the tape is not a stable frequency of 629 kHz, but rather a signal whose frequency at any instant is some small amount above or below 629 kHz.

Deviation

A term used to describe how far the FM carrier swings when it is modulated. In VHS the upper limit is 4.4 MHz.

Dew Detector

A variable resistor whose resistance value depends upon the ambient humidity.

Dihedral

A term used to describe the relative position between the two video heads as they are mounted in the head cylinder. Perfect dihedral means that the tips of the heads are exactly 180° apart:

Dropout

A momentary absence of FM or color signal off the tape, whether due to uneven oxide or a coating of dust on the tape or video heads.

Duty Cycle

In describing a rectangular waveform, the "duty" refers to the percentage of off time and on time for one complete cycle. 50-50 means that there are equal periods of off time and on time for one cycle and this would be a square wave.

E-E

Electronics to Electronics...this is the picture viewed on the TV set when a recording is being made. This picture goes through some but not all of the circuits of the recorder and is used to test the operation of said circuits.

EO

Shortened form of "Equalization", used in the audio circuits.

Emphasis

The process of boosting the level of the high frequency portions of the video signal.

FG

Frequency Generator used in the servo circuits.

FL

Filter.

FM Signal

The luminance portion of the video signal is used to control the frequency of an astable multivibrator. The output of this multivibrator is a frequency modulated (FM) signal shifting from 3.4 MHz to 4.4 MHz (plus sidebands).

Field

One half of a television picture. A field consists of 262.5 horizontal scanning lines across the picture tube. Two fields are necessary to complete a fully scanned TV picture (frame). First, one field is "sprayed" on the picture tube, starting at the top of the tube with Line I, and ending at the bottom with Line 262.5. Then, the next field begins at the top of the tube again with Line 262.5 and ends at the bottom with Line 525. The lines of the second field lie inbetween the lines of the first field. This property of falling in-between lines is called "interlacing". The two sweeps of the picture tube, or two fields make up one complete TV picture or "frame". Frame repetition is 30 Hz, therefore field repetition is 60 Hz.

Flagwaving

This is the term used to describe a TV sets ability to accept unstable playback pictures from a video tape recorder. All home VTR's have some degree of playback instability. A TV set with a long horizontal AFC time constant may not recover from the VTR's instability before the active picture is being scanned. This can cause a bending or flapping from side to side of the top inch or so of the screen. This movement is called "flagwaving".

Frame

One complete TV picture. See "Field".

Gate

A circuit which will deliver an output only when a specific combination of its inputs are present. For use in analog or digital applications.

Guard Band

This is the space between video tracks on the video tape in the SP mode. Guard bands contain no information.

Hall Effect IC

An external magnetic field causes current to flow in this type of device.

HD

Horizontal Drive signal.

Head Cylinder

A cylindrical piece of metal which houses the video heads. The tips of the heads protrude slightly from the surface of the cylinder so that they may scan the tape as the cylinder spins.

Head Switching

The action of turning off, during playback, the video head which is not in contact with the video tape. A particular video head will be turned off 30 times per second. This is done so that the head which is not scanning the tape, and therefore not delivering a good signal, cannot contribute any noise to the playback signal.

Head Switching Pulse

The signal which is applied to the Head Amplifier to perform head switching. This is a square wave at 30 Hz, with a 50-50 duty cycle.

Helical

A word used to describe a general type of VTR in which the tape wraps around the video head cylinder in the shape of a 3-dimensional spiral, or "helix". The video tracks are recorded as a series of slanted lines.

IC

Integrated Circuit.

Interchangeability

A term used to describe how well a particular VTR will play back a tape recorded on another VTR of the same type. Good interchangeability indicates good playback.

Interlacing

The property of the scan lines of two television fields to lie in-between each other. See "Field".

Interleaving

A term used to indicate that the harmonics of the chrominance signal lie in-between the harmonics of the luminance portion of the video signal as it is viewed on a spectrum analyzer. This means that the color information of a video signal does not interfere with, although it is broadcast at the same time as, the luminance information.

Also, signals which have this interleaving property are not readily seen on a TV screen, because of their virtual cancellation characteristics.

Interleaving signals (fi) must have the following frequency relationship:

fi =
$$(\frac{2n+1}{2})$$
 x fH (n=0, 1, 2, 3, 4.....)
fH = 15,734 Hz (H sync frequency)

Jitter

The name of the effect on the playback picture if a VTR has too much "wow and flutter". The picture appears to have a rapid shaking movement.

L

Coil.

Luminance

This is the portion of video signal which contains the sync and B/W information.

MMV

Monostable Multi-Vibrator...Usually an IC device which gives a logic high or low output with a variable duration upon receipt of an input pulse or transition.

Non-Linear Emphasis

This is similar to regular emphasis with the difference that small level high frequency portions of the signal are given more of a boost than higher level high frequency portions.

NTSC

The National Television Systems Committee. These four letters identify the United States color television standard.

PG

Pulse Generator used in the servo circuits.

O

A term used to describe the graphic response of a filter or tuned amplifier.

R

Resistor.

Review

To scan the playback picture at a faster than normal speed in the Reverse direction.

RF

Radio Frequencies.

Rotary Chroma

The name of the process used in VHS to change the phase of the chrominance signal at a rate of 15,734 (same as H sync frequency) times per second.

Rotary Transformer

A device used to magnetically couple RF signals to and from the spinning video heads, thus eliminating the need for brushes

Sample and Hold

A process used in comparator circuits by which the value of a particular signal is measured at a specific moment in time ...then this value is stored for later use.

Search

To scan the playback picture at a faster than normal speed in either the forward or reverse direction.

Servo

Short for Servo mechanism. This is an electro-mechanical device whose mechanical operation (for instance motor speed) constantly being measured and regulated so that it closely matches or follows an external reference.

Skew

Another way of saying Tension Error. Skew is actually the change of size or shape of the video tracks on the tape from the time of recording to the time of plyaback. This can occur as a result of poor tension regulation by the VTR, or by ambient conditions which affect the tape.

Subcarrier

The name of the 3.58 MHz continuous wave signal used to carry color information.

SS

Slow and Still.

T

Transformer.

TP

Test Point.

TR

Transistor.

Tension Error

See "Skew".

Time Base Stability

A term used to describe how closely the playback video signal from a VTR matches an external reference video signal...in regard to sync timing rather than picture content.

Tracking

This is the action of the spinning video heads during play-back when they accurately track across the video RF information laid down during recording. Good tracking indicates that the heads are positioning themselves correctly, and are picking up a strong RF signal. Poor tracking indicates that the heads are off track, and picking up low level RF signal or noise.

VCO

Voltage Controlled Oscillator...An oscillator whose frequency of oscillation is governed by an external voltage.

Video Head

This is the electro-magnet used to develop magnetic flux which will put RF information on the tape. In VHS, two video heads are mounted in a rotating cylinder around which the video tape is wrapped. As the cylinder spins, each video head is allowed to alternately scan the tape.

Video Track

The name of the RF information laid down during recording, as a particular video head scans across the tape.

VHS

Video Home System.

VTR

Video Tape Recorder.

VV

Video to Video...or...the actual playback picture produced from a tape during playback.

vxo

Voltage Controlled Crystal Oscillator...Similar to VCO except that a quartz crystal is sued as a reference which can be varied.

White Clip

After emphasis, the positive going spikes (overshoot) of the video signal may be too large for safe FM modulation. A white clip circuit is used to cut off these spikes at an adjustable level.

XTAL

Abbreviation for crystal.

Y Signal

The B/W portion of a video signal containing B/W information and sync.

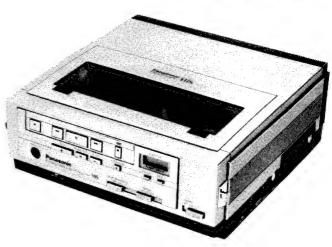
Service Manual

Vol. 2

Mechanical Adjustment
Procedures
Electrical Adjustment
Procedures

Panasonic VHS Omnivision PV-5000

Portable Video Cassette Recorder



SPECIFICATIONS

Power Source:

12VDC

Battery LCS-2012P Elec. Tuner Unit PV-A200 Prog. Tuner Unit PV-A500 Multiple AC Adaptor PV-A100 Plug-in AC Adaptor PV-A110

Power Consumption: Television System:

Approx. 7W at Play mode EIA Standard (525 lines, 60 fields)

NTSC color signal

Video Recording

System: 2 rotary heads helical scanning system

Luminance: FM azimuth recording Chrominance: Converted subcarrier phase shift recording

Audio Track:

Tape Format: Tape width 1/2" (12.7 mm), high density

tape

Tape Speed: SP mode: 1-5/16 i.p.s (33.35 mm/s)

LP mode: 21/32 i.p.s (16.67 mm/s) SLP mode: 7/16 i.p.s (11.12 mm/s)

Record/Playback Time: 360 min. with NV-T120 used in SLP

mode

FF/REW Time:

Less than 6 min. with NV-T120

Heads: V

Video: 2 Rotary heads

Audio/Control: 1 stationary head

Erase: 1 full track erase 1 audio track erase for audio

dubbing

Input Level:

Video: VIDEO IN Jack (RCA type)

 $1.0\,\mathrm{Vp\text{-}p},\,75\Omega$ unbalanced

Audio: MIC IN Jack

 $-70\,\mathrm{dB}$, 600Ω unbalanced

Output Level:

Video: VIDEO OUT Jack (RCA type)

 $1.0\,\mathrm{Vp}$ -p, 75Ω unbalanced

Audio: AUDIO OUT Jack (RCA type)

 $-6 \, \mathrm{dB}$, 600Ω unbalanced

RF Modulated: Ch3/Ch4 switchable,

72 dB μ (open voltage), 75 Ω unbalanced

Video Horizontal

Resolution: More than 230 lines

Audio Frequency

Response: SP: 100 Hz ~ 8 kHz, (10 dB down) LP: 100 Hz ~ 6 kHz, SLP: 150 Hz ~ 5 kHz

Signal-to-Noise Ratio: Video: SP mode: better than 40dB

LP mode: better than 40dB SLP mode: better than 40dB (Rohde & Schwarz noise meter) Audio: SP mode: better than 42dB LP mode: better than 40dB

SLP mode: better than 40 dB

Operating

Temperature: $32^{\circ}F \sim 104^{\circ}F$ (0°C ~ 40°C)

Operating Humidity: 10%~

 $10\% \sim 75\%$

Weight: 8.4 lbs (3.8 kg) (with internal battery pack) Dimensions: 9-3/8 "(W) $\times 3-5/8$ "(H) $\times 9-9/16$ "(D)

 $238(W) \times 92.5(H) \times 242(D) mm$

Weight and dimensions shown are approximate. Specifications are subject to change without notice.

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MECHANICAL ADJUSTMENT PROCEDURES

DISASSEMBLY OF CABINET PARTS

1. DISASSEMBLY FLOWCHART

This flowchart indicates disassembly steps of the cabinet parts and the Bottom P.C.B.s in order to gain access to the items necessary for servicing. When reassembling, perform the steps in the reverse order. The bottom plate can be removed individualy.

Notes:

- 1. When removing the front panel, work with care so as not to break the locking portions.
- 2. Adjustments are required if the Cassette Up Holder was replaced.

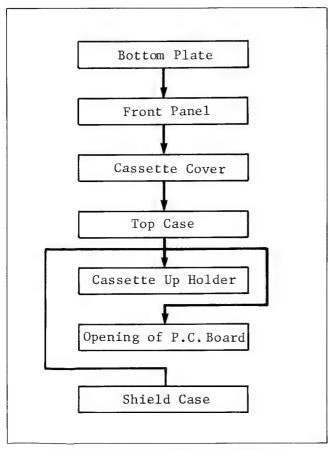


Fig. Ml Disassembly Flowchart

2. DISASSEMBLY METHOD

Notes:

- a. Place the cloth or any other soft materials under the PC Boards or deck for preventing them being damaged while servicing.
- b. When reinstalling, ensure the connectors are connected and any electrical components are not damaged.

2-1. Removal of the Bottom Plate

- 1. Place the deck upside down so the bottom plate faces upward.
- 2. Remove 5 screws (A). Then remove the bottom case by lifting the rear portion of it.

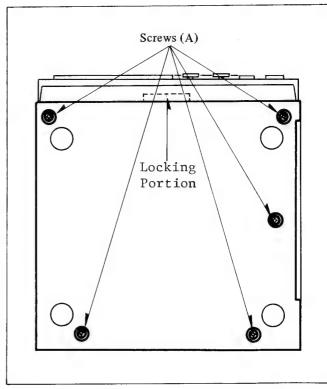


Fig. M2 Removal of the Bottom Plate

Note:

When reinstalling, first insert the locking portion into the slot of the front panel.

2-2. Removal of the Front Panel

1. Remove the 2 switching knobs, unlock the locking portions and hold the both right and left ends of the front panel. Then carefully lift and turn the top portion of it to remove. And remove the Slow Tracking Control Volume.

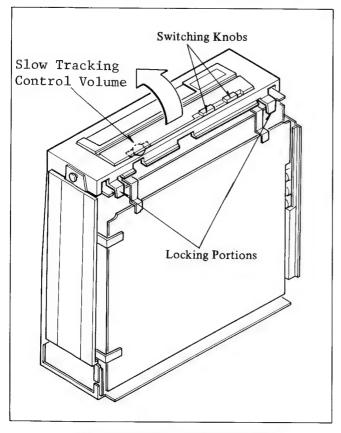


Fig. M3. Removal of the Front Panel

Note:

Work this step with extreme care for not being damaged on the locking portions.

2-3. Removal of the Cassette Cover

Supply the power to the deck and turn it on. Then press the EJECT button to raise the cassette up holder.

Remove 2 rubbers and 2 screws (B). Then carefully lift and turn the front portion of it to remove. Pay attention for not being damaged on the locking portions.

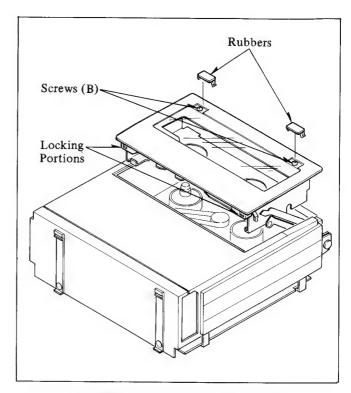


Fig. M4. Removal of the Cassette Cover

Note:

When reinstalling, first suit the locking portions of the cassette holder unit.

2-4. Removal of the Top Case

- 1. First confirm that the battery is inside the battery compartment or not. If it is, take the battery
- 2. Remove 2 screws (C). Then remove the top case.

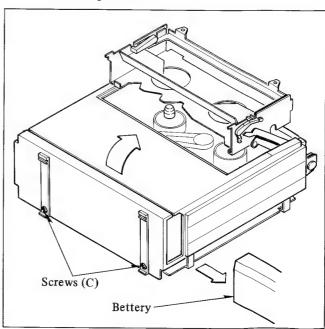


Fig. M5. Removal of the Top Case

2-5. Removal of the Cassette Up Holder

Remove 2 connectors P 40 and P 41. Then unlock the 4 locking portions and open the Front P.C. Board. Then remove 6 screws (D), and remove the cassette up holder.

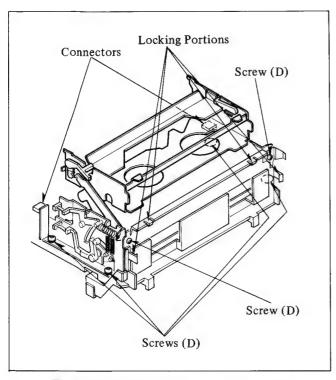


Fig. M6. Removal of the Cassette Up Holder

Note:

When this part was removed or replaced the final adjustment is required. Refer to "ADJUSTMENT OF CASSETTE UP HOLDER" section.

2-6. Opening of the P.C. Board

Unlock the 6 locking portions and disconnect the connector P 1 then open the P.C. Board.

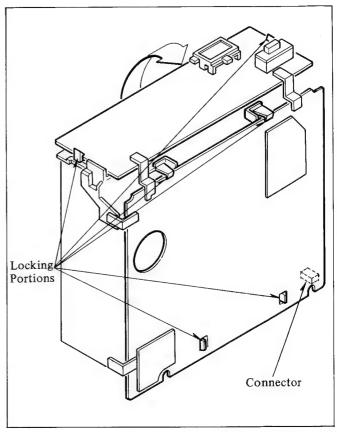


Fig. M7. Opening of the P.C. Board

2-7. Removal of the Shield Case

Remove the 2 screws (E) and the plastic rivet. Then carefully lift it up to remove.

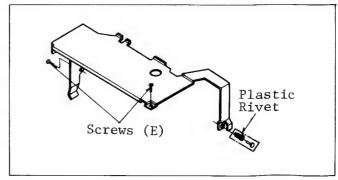


Fig. M7-1 Removal of the Shield Case

ADJUSTMENT PROCEDURES

1. REPLACEMENT OF UPPER CYLINDER UNIT

Work with extreme care when removing or replacing the upper cylinder unit. Do not touch video heads duirng servicing.

- 1. Unsolder the 4 wires which are color corded to matching wires on the head relay board.
- 2. Remove the 2 screws and gently lift the upper cylinder unit from the shaft.

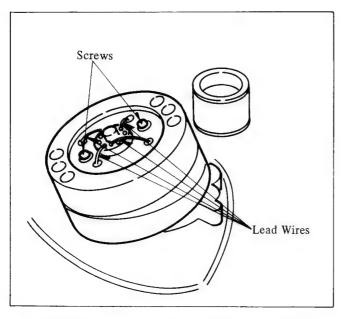


Fig. M8. Replacement of Upper Cylinder Unit-(1)

3. Before reinstalling a new unit, clean the D.D. cylinder shaft and the surface that engages with on the upper cylinder with a soft cloth dampened with freon liquid.

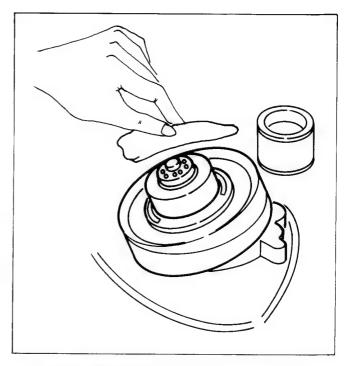


Fig. M9. Replacement of Upper Cylinder Unit-(2)

4. Install new unit so that the color code of the head relay board.

Tighten the 2 screws and resolder the 4 wires to the head relay board.

Note:

Upon completion of replacement, confirm performance. And if required, perform "TAPE INTERCHANGEABILITY ADJUSTMENT".

2. REPLACEMENT OF D.D. CYLINDER UNIT

Work with extreme care when removing or replacing the D.D. cylinder unit. Do not touch video heads during servicing.

- Disconnect the connector cover on P 8 and 2 connectors P 8 (on top side) and P 47 (on bottom side) from the D.D. cylinder unit.
- 2. Remove the screw (A) and discharge angle.
- Remove the D.D. cylinder unit and cylinder cover by removing 5 screws (B).

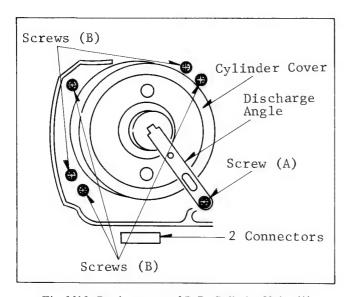


Fig. M10. Replacement of D.D. Cylinder Unit-(1)

Note:

Since there is very little clearance between D.D. cylinder unit and chassis, remove the D.D. cylinder unit gently and carefully.

4. Reinstall the new D.D. cylinder unit, restore the wires and connect the P 8 and P 47.

Notes:

 When reinstall the New D.D. Cylinder Unit, fit the New D.D. Cylinder unit to the chassis by turn counterclockwise it.

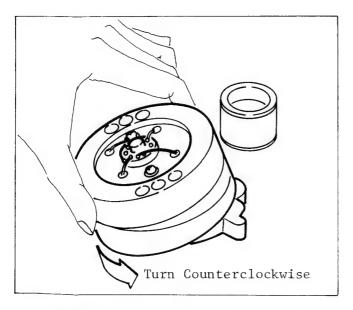


Fig. M11. Replacement of D.D. Cylinder Unit-(2)

2. Upon completion of replacement, confirm performance.

If any further maintenance is required, perform "TAPE INTER-CHANGEABHLITY ADJUSTMENT".

3. ADJUSTMENT OF V-STOPPERS

Equipment Required: V-Stopper Adjustment

Fixture (VFKS0016)

- 1. Remove the D.D. Cylinder Unit from chassis. (Upper Cylinder Unit is not required to be removed.)
 Refer to "REPLACEMENT OF D.D. CYLINDER UNIT" section.
- 2. Keep 4 screws (A) loose, set the fixture.
 Push the V-stoppers snugly against the pins and tighten the 4 screws (A).

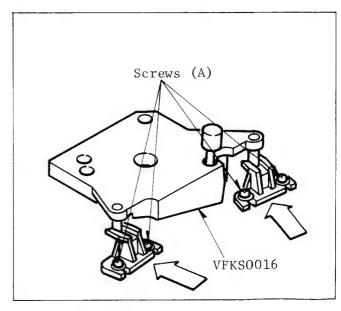


Fig. M12. Adjustment of V-Stoppers

4. CONFIRMATION OF BRAKE TORQUE

Equipment Required:

Dial Torque Gauge (VFK0133) Adaptor for Gauge (VFK0134)

- 1. Attach the adaptor to the torque gauge and place the deck in STOP mode.
- 2. Place the torque gauge on the reel table. The weight of gauge should not rest on the reel table.

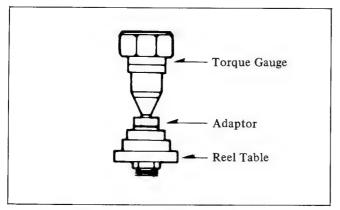


Fig. M13. Confirmation of Brake Torque-(1)

3. Turn torque gauge in either direction indicated in the Fig. M14 and read the gauge when the brake begins slipping.

Note:

If proper brake torque can not be obtained, clean the rotating surface of reel table with a soft cloth and recheck torque before replacing brake drum.

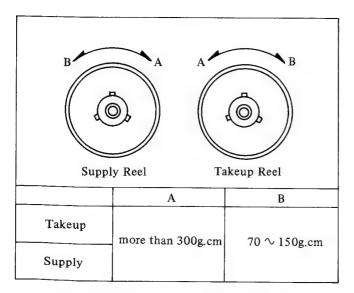


Fig. M14. Confirmation of Brake Torque-(2)

5. CONFIRMATION OF TAKEUP TORQUE

Equipment Requird:

Dial Torque Gauge (VFK0133) Adaptor for Gauge (VFK0134)

Specifications:

gauge.

in PLAY mode 100 \sim 150 g.cm in F.F. mode more than 400 g.cm in REW mode more than 400

 $$\rm g.\,cm$$ 1. Attach the adaptor to the torque

- 2. Cover the takeup and supply photo transistors with black tape. Lower the cassette up holder (with out cassette cover), and turn power switch on.
- 3. Place the torque gauge on the takeup reel table, push the play button and read torque on the gauge. Repeat in F.F. mode by pushing the F.F. button.

Note:

While measuring, the weight of the gauge should not rest on the reel table.

- 4. Set the torque gauge on the supply reel table, press the rewind button to check REW mode torque.
- 5. Remove the black tape that covered the the photo transistors.

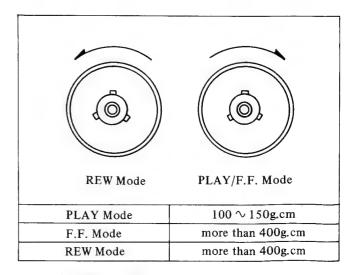


Fig. M15. Confirmation of Takeup Torque

6. POSITION ADJUSTMENT OF TENSION POST

Equipment Required: Tension Post Adjustment

Plate (VFKS0015)

Fine Adjustment

Screwdriver (VFK0136)

- Cover the photo transistor with black tape. Lower the cassette up holder (without cassette cover), and turn power switch on.
- 2. Push the play button for loading. As soon as the loading is completed, disconnect the AC plug.
- 3. Then remove the cassette up holder.
- 4. Place the adjustment plate over the reels and slightly loosen the screw
 (A) securing the tension band bracket.
- 5. Insert the fine adjustment screwdriver into the hole and move the tension band bracket in either of direction so that the tension post just touches the adjustment plate. The tension post removes from the adjustment plate by turning the fine adjustment screwdriver counterclockwise. Then turn it clockwise until the tension post just touches the adjustment plate and tighten the mounting screw.

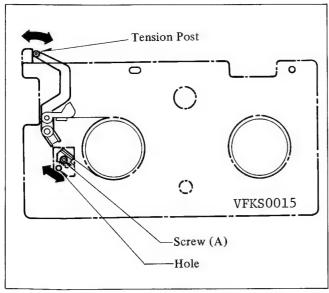


Fig. M16. Position Adjustment of Tension Post

7. MEASUREMENT AND ADJUSTMENT OF BACK TENSION

A. Measurement Procedure

Equipment Required:
Back Tension Meter (Tentelometer, Model
T2-H7-UM, Purchase locally)
VHS Cassette Tape (120 Minutes tape)

Specification: 25 $^{\circ}$ 30 g

- 1. Pull the erase head in the direction indicated by the arrow and hold it by adhesive tape.
- 2. Play back the cassette tape from is beginning and wait until tape running has stabilized. (for approx. 10 to 20 seconds)
- 3. Insert tention meter in tape path and confirm reading.
- 4. If the reading is out of spec., continuously perform the adjustment procedure.

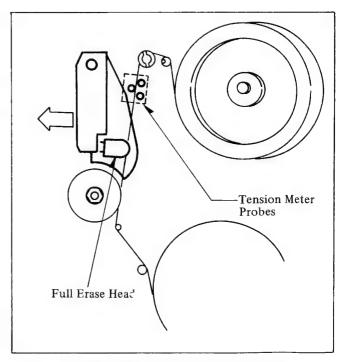


Fig. M17. Measurement of Back Tension

Notes:

- 1. Make sure that the three probes of the meter are all in good contact with tape, but out of contact with any parts while measuring.
- 2. It is recommended to be measured three times as tension meter is very sensitive.

B. Adjustment Procedure

Equipment Required:
Fine Adjustment
Screwdriver (VFK0136)

- 1. Loosen a screw (A) and insert the fine adjustment screwdriver into the hole (B).
- 2. Turn the screwdriver in either of direction indicated by the arrow to obtain the specified tension. Turn the screwdriver clockwise to lower tension, counterclockwise to raise it.

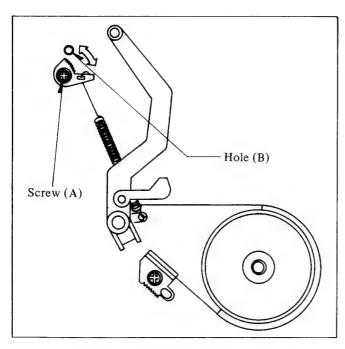


Fig. M18. Adjustment of Back Tension

3. Tighten the screw (A) and verify tension with the meter once again.

Note:

Upon completion of adjustment, remove the adhesive tape.

8. HEIGHT ADJUSTMENT OF REEL TABLES

Equipment Required:
Post Adjustment Plate (VFKS0010)
Reel Table Height Gauge .. (VFKS0009)

Specification \dots \pm 0.1 mm

1. Place the post adjustment plate over the reels, and put the gauge on it. Set the gauge to zero "0" with the condition that the foot scraper of

reference of height of reel tables

and their height are measured based

* Cut-out surface of VFKS0010 is

the gauge touches the cut-out portion of the plate.

on this reference.

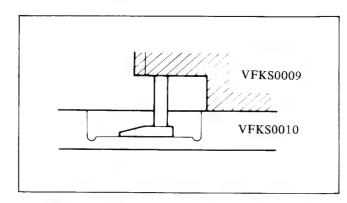


Fig. M19. Height Adjustment of Reel Tables-(1)

2. Then measure the top portion of reel table and confirm the difference against the condition just performed in former step. Do same for the other reel table.

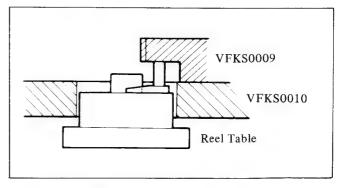


Fig. M20. Height Adjustment of Reel Tables-(2)

- 3. If the difference of reading of gauge between height at cut-out portion of VFKS0010 and the height of reel tables is more than 0.1 mm (higher or lower), adjust the height of reel to obtain the specified height.
- 4. For adjustment, change the poly slider washer located under the reel table. The washer is available in three sizes of thickness, t=0.13 mm, 0.25 mm and 0.5 mm.

9. HEIGHT ADJUSTMENT OF TAPE GUIDE POSTS

Equipment Required:	
Hex. Wrench (0.9mm)	(VFK0146)
Post Adjustment Plate	(VFKS0010)
Reel Table Height Gauge	(VFKS0009)
Nut Driver (5.5mm)	(Purchase
	Locally)
Post Adjustment	
Screwdriver	(VFK0137)

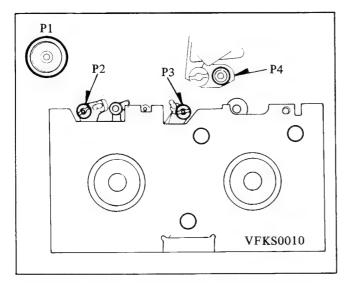


Fig. M21. Height Adjustment of Tape Guide Posts-(1)

1. First Install the post adjustment plate and lower all posts so that the condition as shown.

(Lower end of post, tape guide, should be lower than foot of gauge.) Loosen a hex. screw located on the lower portion of posts (P2 & P3) then turn the top of the posts with post adjustment screwdriver.

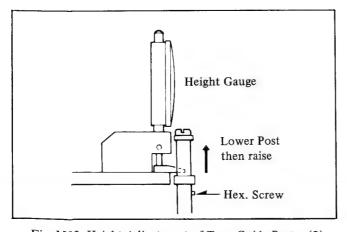


Fig. M22. Height Adjustment of Tape Guide Posts-(2)

2. Place the height gauge on the adjustment plate and fit the foot of gauge to the post. The condition to fit the foot should be as shown. (The foot of gauge should be fully lowered till it touches the plate.)

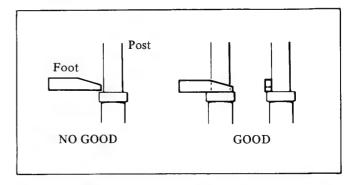


Fig. M23. Height Adjustment of Tape Guide Posts-(3)

3. Set the height gauge to zero and slowly raise the post until it just touches the foot of gauge. For adjustment of Pl & P4, use the nut driver.

Note:

Upon completion of adjustment, tighten hex. screws on P2 and P3 and install the post cap on P4. When the post cap on P4 is reinstalled, the direction of it should be as shown below viewing from the direction indicated by the arrow.

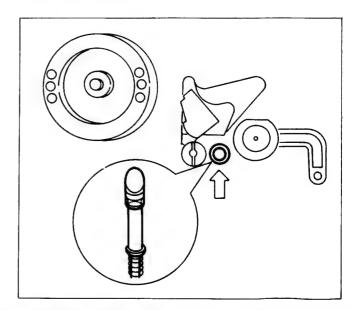


Fig. M24. Height Adjustment of Tape Guide Posts-(4)

10. HEIGHT ADJUSTMENT OF PULL OUT POST

Notes:

- 1. The adjustment should be performed after the adjustment of P4 as the spec. is based on height of P4.
- 2. The adjustment should be performed in the Loading completion mode.
- Unless the replacement or adjustment of this post is completed, remove the AC plug.

Equipment Required:

Post Adjustment Plate (VFKS0010)
Reel Table Height Gauge ... (VFKS0009)
Nut Driver (5.5mm) (Purchase
Locally)

Specification: 0.02 mm \sim 0.06 mm

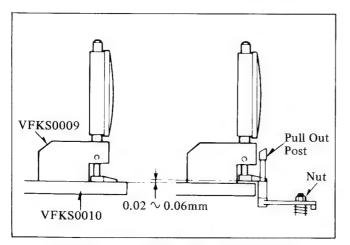


Fig. M25. Height Adjustment of Pull Out Post

- Turn power switch on, cover the takeup and supply photo transistors with black tape, press the cassette up holder down and push the play button for loading.
- 2. As soon as loading is completed, disconnect the AC plug and remove the cassette up holder.
- 3. Place the post adjustment plate, put the reel table height gauge on the plate and set height gauge to zero with condition the foot touches on the height adjustment plate.
- 4. Slightly lower the post by turning the nut clockwise. Fit the foot to the post so that the condition becomes as shown.

- 5. Then slowly and slightly turn the nut till the gauge reads specified height.
- 6. Reinstall the cassette up holder and remove the black tape that covered the photo transistors and plug in for unloading.

11. TAPE INTERCHANGEABILITY ADJUSTMENT

Note:

To perform these adjustment/confirmation procedures, make sure that the track-ing control is set into the detent (fixed) position.

Equipment Required:
Alignment Tape (VFM8080H6)
Post Adjustment
Screwdriver (VFK0137)
H-Position Adjustment
Screwdriver (VFKS0003)
Hex. Wrench, 0.9 mm ... (VFK0146)
Hex. Wrench, 1.5 mm ... (VFK75)
Nut Driver (5.5mm) ... (Purchase
Oscilloscope Locally)

11-1. Confirmation of Tape Travel

1. Play-back a cassette tape and confirm that the tape travels without curling at the edges of the tape.

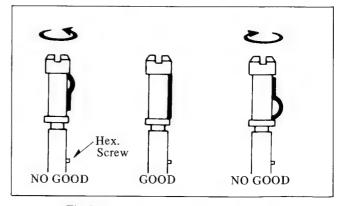


Fig. M26. Confirmation of Tape Travel

 If curling is apparent, adjust the height of posts by turning the top of post with the post adjustment screwdriver (for P2 & P3).

Note:

Before turning P2 and P3, slightly loosen a hex. screw.

11-2. Confirmation of A/C Head Height

Note:

Unless the A/C Head is replaced, this procedure should not be performed.

1. Looking at the lower edge of the control head with the tape running, ensure that the lower edge of the tape runs along the lower edge of the control head. If it doesn't, slightly turn the nut (A) in either direction to correct. Clockwise to lower the head and counterclockwise to raise it.

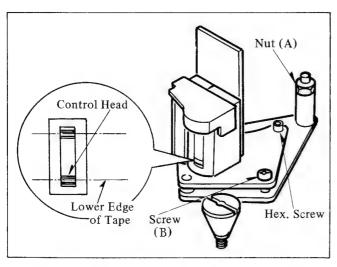


Fig. M27. Confirmation of A/C Head Height

11-3. Adjustment of A/C Head Height

- 1. Connect the oscilloscope to the audio output on the rightside of the deck.
- 2. Play-back the monoscope portion (6 kHz, Audio) of the alignment tape, VFM8080H6.

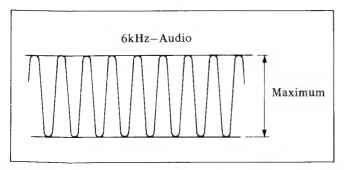


Fig. M28. Adjustment of A/C Head Height

3. Adjust the screw (B) on the head base so the output level becomes maximum.

11-4. Confirmation and Adjustment of Tilt of A/C Head

Note:

Unless P4 is adjusted, (See Fig. M24) this procedure should not be performed.

A.Confirmation Procedure
Play-back the tape and confirm that
the tape runs between lower and top
limiters of the post. If the lower
edge or top edge of the tape turns
with waving or frilling, then
correct the tilt of the A/C Head by
turning hex. screw. (A hex. screw
is shown in Fig. M27).

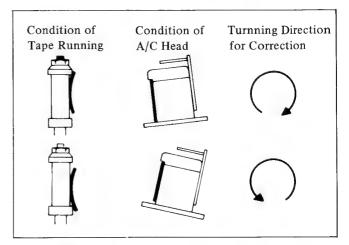


Fig. M29. Confirmation of Tilt of A/C Head

- B. Adjustment Procedure
- 1. Connect the oscilloscope to Test Point (TP8001).

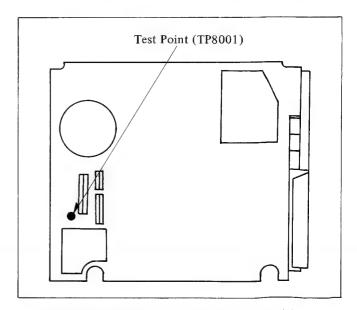


Fig. M30. Adjustment of Tilt of A/C Head-(1)

2. Play-back the monoscope portion of the alignment tape, VFM8080H6 and adjust the hex. screw so that the RF envelope output level is maximum. (See Fig. M31).

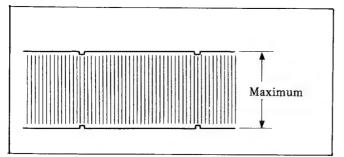


Fig. M31. Adjustment of Tilt of A/C Head-(2)

- 11-5. Horizontal Position Adjustment of A/C Head
 - 1. Set the tracking control to the detent (fixed) position. Connect the oscilloscope to the Test Point (TP 8001).
 - 2. Playback the monoscope portion of the alignment tape VFM8080H6 and confirm the envelope figure.
 - 3. If adjustment is required, set the H-position adjustment screwdriver into the slot of the adjustment nut and rotate in either direction to obtain maximum envelope output. (See Fig. M31)

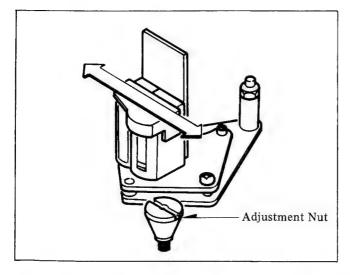


Fig. M32. Horizontal Position Adjustment of A/C Head

- 11-6. Confirmation/Adjustment of Envelope Output
 - 1. Set the tracking control in the detent (fixed) position. Connect the oscilloscope to Test Point (TP8001).
 - 2. Play-back the monoscope portion of the alignment tape VFM8080H6, adjust posts P2 and P3 while watching the scope display so that RF envelope on the scope becomes as flat as possible.

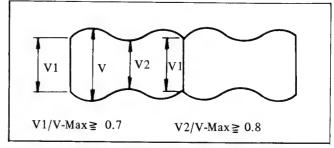


Fig. M33. Confirmation of Envelope Output

3. If the scope display is as follows, adjust the height of P2 shown in Fig. M21

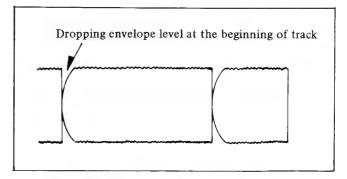


Fig. M34. Adjustment of Envelope Output-(1)

4. If the scope display is as follows, adjust the height of P3 shown in Fig. M21

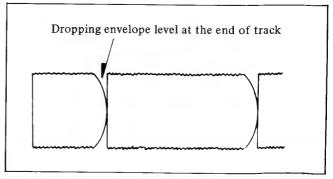


Fig. M35. Adjustment of Envelope Output-(2)

5. The scope display with P2 and P3 adjusted correctly should be as shown below.

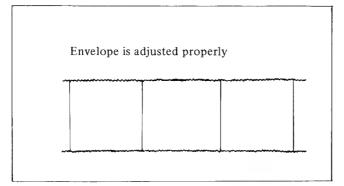


Fig. M36. Adjustment of Envelope Output-(3)

6. When adjustment is required, turn slowly and wait for servo lock.

Be sure the tape travels over the post as shown.

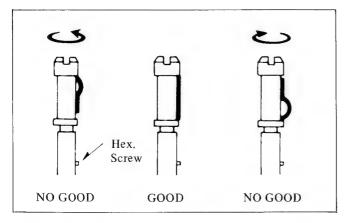


Fig. M37. Adjustment of Envelope Output-(4)

12. TENSION ADJUSTMENT OF TIMING BELT

Equipment Required:

Fan-type Tension Gauge (VFK66)

Specification: $300 \pm 100 \text{ g}$

- 1. Loosen a screw (A) and push the Idler Pressure Lever by the fantype tension gauge.
- 2. When the gauge reads the specified pressure, tighten a screw (A).

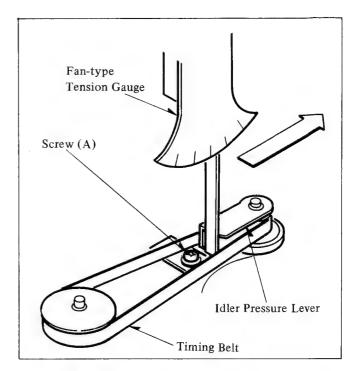


Fig. M38. Tension Adjustment of Timing Belt

13 ADJUSTMENT OF F.G. HEAD GAP

Equipment Required:

Fine Adjustment Screwdriver ... (VFK0136)

Specification: $0.12 \pm 0.02 \text{ mm}$

1. Remove 2 screws (A) and thrust angle unit, then remove the sub plate, 5 screws (B) and stator unit.

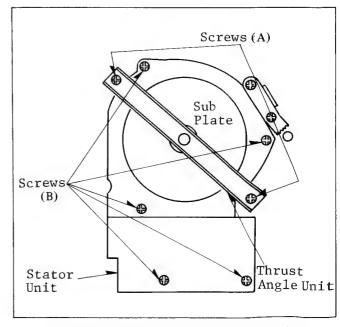
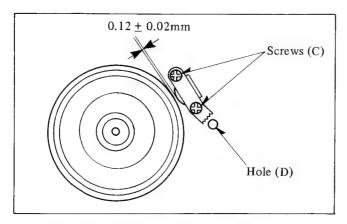


Fig. M39. Adjustment of F.G. Head Gap-(1)

2. Slightly loosen the 2 screws (C) and set the fine adjustment screwdirver into the hole (D).

Turn screwdriver counterclockwise until the F.G. head touches the rotor and just slightly turn it clockwise so the gap becomes as



specified.

Fig. M40. Adjustment of F.G. Head Gap-(2)

c.f. Instead of this method, the cover page of this volume can be alternative because the thickness is approximately 0.12 mm.

Notes:

- 1. Do not touch the circumferential surface of rotor with any tool, and keep any magnetizable material away from the rotor magnet.
- 2. When reinstalling the stator unit, install it concentrially with boss of rotor.

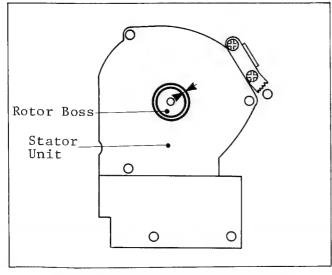


Fig. M41. Adjustment of F.G. Head Gap-(3)

14. CONFIRMATION/ADJUSTMENT OF THRUST GAP

Equipment Required:
Reel Table Height Gauge ... (VFKS0009)

Specification: $0.02 \sim 0.10 \text{ mm}$

- 1. Place the height gauge on the thrust angle, and set the gauge to zero "0".
- 2. Next, push the capstan shaft by your finger, and confirm the thrust gap.
- 3. If the gap is out of specification, then adjust the thrust boss by turning it clockwise or counterclockwise.

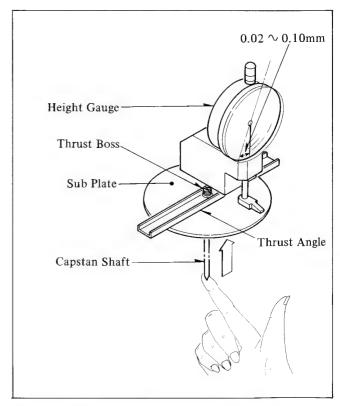


Fig. M42. Confirmation/Adjustment of Thrust Gap-(1)

Note:

Upon completion of above procedure adjust the capstan seal so that this seal is out of contact with the pressure roller and capstan holder. The specification of clearance is approximately $0.1\,\sim\,0.5$ mm.

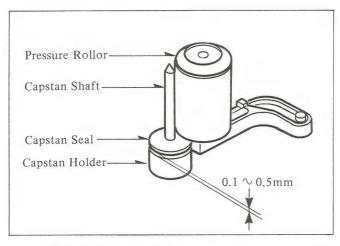


Fig. M43. Confirmation/Adjustment of Thrust Gap-(2)

- 15. ASSEMBLY AND ADJUSTMENT OF GEARS AND RODS
- Install the supply and takeup loading arm units so that the projection
 (A) on the takeup loading gear aligns with the delta "Δ" mark (B) on the supply loading gear.
 Then install the 2 retaining rings.
 Ensure that the loading arm units is still in the fully unloaded condition.



Fig. M44. Assembly and Adjustment of Gears and Rods-(1)

Note:

Pay attention that the washers are remaining under the loading gears.

2. Install the sector gear (II). Next install the sector gear (III) so that the convex on the sector gear (III) fits in with the concave on the sector gear (II).

Then install the retaining ring.

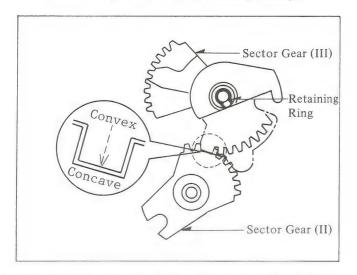


Fig. M45. Assembly and Adjustment of Gears and Rods-(2)

Next, align the delta " Δ " mark (C) on the sector gear (III), rib (D) on the sector gear (II) and the shaft (E) as they are on one line.

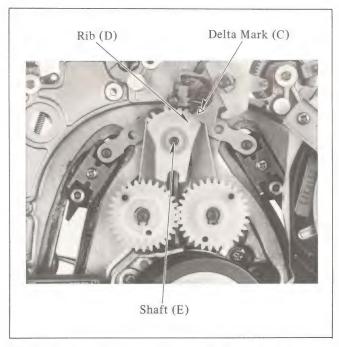


Fig. M46. Assembly and Adjustment of Gears and Rods-(3)

Then install the sector gear (I) so that the hole (F) on the sector gear (I) aligns with the projection (G) on the supply loading gear. Then install the retaining ring.

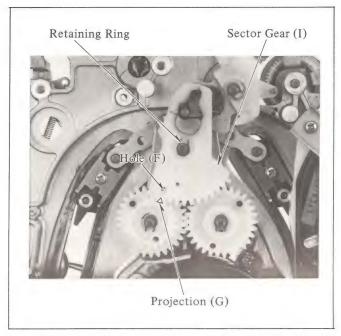


Fig. M47. Assembly and Adjustment of Gears and Rods-(4)

3. Install the sub cam gear so that the hole on gear meets the hole on the chassis.



Fig. M48. Assembly and Adjustment of Gears and Rods-(5)

4. Install the 4 washers.

And install the sub rod unit so that the pin on the sub rod unit fit into the sub cam gear.

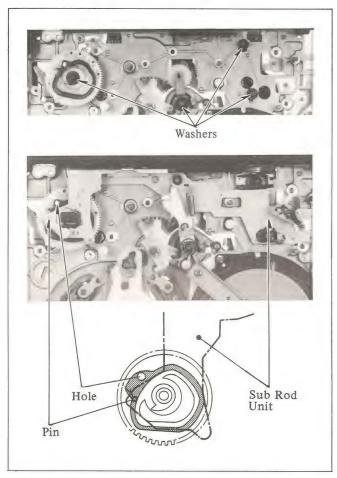


Fig. M49. Assembly and Adjustment of Gears and Rods-(6)

Then install the 4 washers, 2 retainings and 2 springs (H).

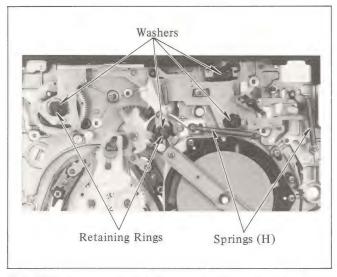


Fig. M50. Assembly and Adjustment of Gears and Rods-(7)

5. Confirm the sub cam gear is keeping the condition described in step 3. Then, install the main cam gear so that the hole (J) on the main cam gear aligns with the hole (K) on the sub cam gear.

And install the washer.

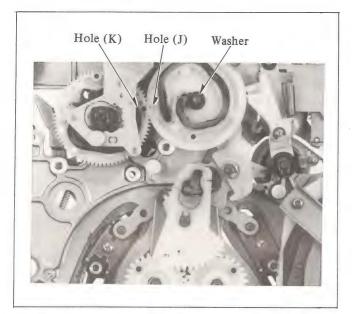


Fig. M51. Assembly and Adjustment of Gears and Rods-(8)

6. Install the main rod unit so that the pin (L) on the main rod unit fits into the part (M) on the sub rod unit.

Then install the 3 washers and 4 retaining rings.

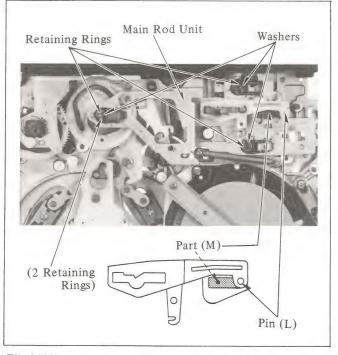


Fig. M52. Assembly and Adjustment of Gears and Rods-(9)

7. Confirm the sub cam gear is keeping the condition described in step 3. Then, install the eject stopper unit, screw (N), spring (P), eject kick lever unit, retaining ring and spring (Q).

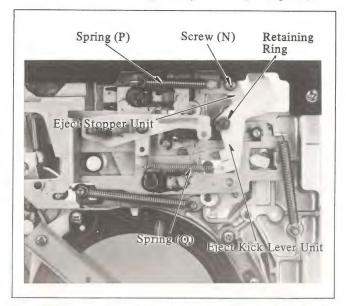


Fig. M53. Assembly and Adjustment of Gears and Rods-(10)

Note:

Do not transform the springs when installing them.

8. Confirm the sub cam gear is keeping the condition described in step 3. Rotate the gear on the rotary switch so that it becomes click (detent) position, then install the switch with 2 screws (R).

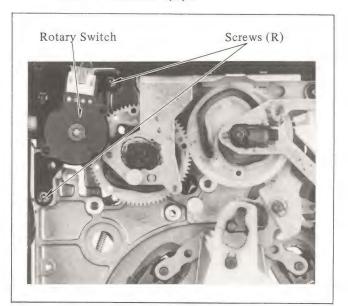


Fig. M54. Assembly and Adjustment of Gears and Rods-(11)

There is one click point per 4 rotations.

9. Rotate the sub cam gear counterclockwise by your finger and make short loading. Then rotate it clockwise till the deck becomes the STOP condition.

Then, install the loading motor with 3 screws (S) and connect the connector P = 14.

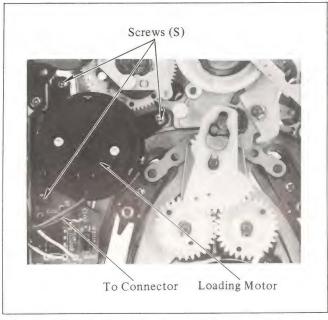


Fig. M55. Assembly and Adjustment of Gears and Rods-(12)

16. POSITION ADJUSTMENT OF CASSETTE UP HOLDER

Equipment Required:

Cassette Holder Fixture ... (VFKS0017)

- Supply power to the deck and make EJECT condition. Then turn power off.
- 2. Remove 2 screws (A) and loosen a 4 screws (B).
- 3. Insert the fixture and push it all the way in until it touches the tabs on the cassette holder. Hold the fixture and cassette holder together with your hand, then slowly lower it while watching all holes and cut-outs until the cassette holder latches.
- 4. Press the center portion of the fixture and adjust the position so as to clear the reels, then tighten the 4 screws (B). And Tighten the 2 screws (A).

5. Supply power again and ensure smooth movement by repeatedly pressing down and ejecting the cassette holder.

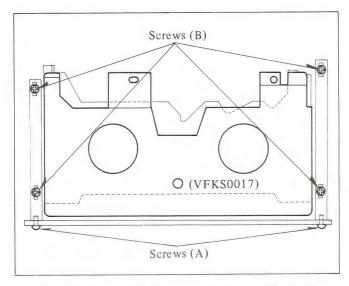


Fig. M56. Position Adjustment of Cassette Up Holder

17. ADJUSTMENT OF LEAF SWITCHES

Equipment Required:
Leaf Switch Adjustment Fixture
.... (VFKS0018)
Fine Adjustment Screwdriver
.... (VFK0136)

- 1. Remove the Cassette Up Protector (plastic cover) on the leaf switches.
- 2. Set the fixture to the lock roller pin and lower edge of cassette up holder.
- 3. Slightly loosen a screw (A) and insert the adjustment screwdriver to the hole (B).
- 4. Adjust the gap(C) so that the up lever and down lever just touches with leaf switches by turning adjustment screwdriver, then tighten a screw (A).
- 5. Upon completion of adjustment, confirm the condition of leaf switches. (See Fig. M58)

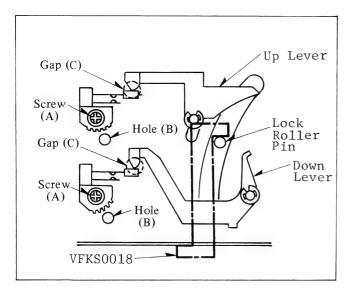


Fig. M57. Adjustment of Leaf Switches

Leaf Switches Cassette Up Holder	Up Side Leaf Switch	Down Side Leaf Switch
UP	ON	ON
DOWN	OFF	ON

Fig. M58 Confirmation of Leaf Switch

18. POSITION ADJUSTMENT OF RECORDING SAFETY SWITCH

Equipment Required:
Cassette Holder Fixture ... (VFKS0017)
Hex. Wrench (0.9mm).....(VFK0146)

- 1. Place the fixture in place over the reel tables.
- 2. Insert the hex. wrench into the hex. screw. Turn hex. wrench in either direction till the switch closes.

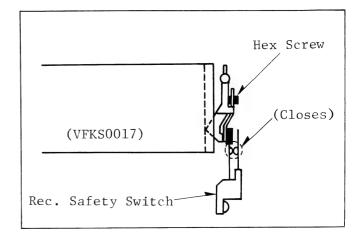


Fig. M59 Position Adjustment of Recording Safety Switch-(1)

Note:

When cassette with an erase tab is used, the switch closes, and without a tab, it opens.

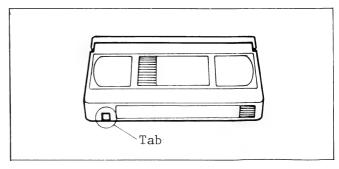
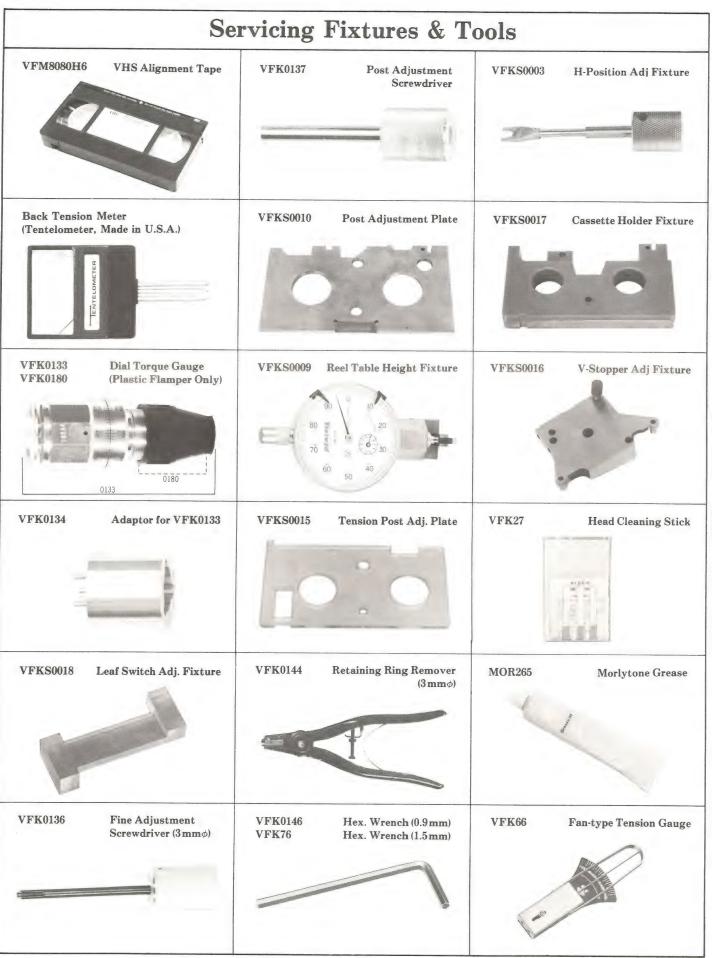


Fig. M60 Position Adjustment of Recording Safety Switch-(2)



ELECTRICAL ADJUSTMENT PROCEDURES

This section provides complete electrical adjustment procedures which may be required for electric circuits of 2/4/6 hour selectable portable VHS video cassette recorder.

1. Test Equipment

To perform the electrical adjustments completely, the following equipment is required.

- DVM (Digital Volt Meter)
 Voltage Range: 0.001 50V
- 2. Dual-trace Oscilloscope
 Voltage Range : 0.05 50V/Div.
 Frequency Range: DC 10MHz
 Probes: 10:1, 1:1
- Frequency Counter
 Frequency Range: 0 10MHz
- 4. Signal Generator Sinewaye: 0 - 10MHz
- 5. Sweep Generator Frequency Range: 0 - 10MHz
- 6. Color TV Receiver or Monitor
- 7. Plastic Tip Driver
- 8. VHS Alignment Tape VFM8080H6



Fig. El

Start Counter Reading	0	017±4	092 ± 6	130 ± 10
Video	Blank	Monoscope	Color Bars	Multi-Burst
Audio	Blank	6KHz	3KHz	1 KHz

Fig. E2

2. Adjustment Procedures

Note: Components and Test Points in each section are series numbers. But for, easy alignment only the last numbers are used on P. C. Board,

These adjustment procedures consist of the following sections.

			SERIES
1.	A.V.R	. Section	1000
2.	System	m Control Section	6000
3.	Servo	Section	2000
		Section	4000
5.	Video	Section Luminance	3000
		Chrominance.	8000
6.	WIRED	REMOTE CONTROL UNIT SECT	TION

2-1. A.V.R. Section

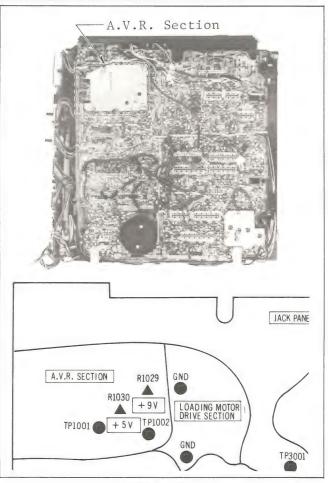


Fig. E3

2-1-1. +9V, +5V Regulator Adjustment

Test Points: TP1001, TP1002

Adjustments: R1029 (+9V), R1030 (+5V)

- 1. Connect the Multi-connector to the deck so that +12V is supplied to the deck.
- 2. Place the unit in PLAY mode.
- 3. Connect the DVM to TP1001 on the A.V.R. section.
- 4. Adjust the $\pm 9V$ (R1029) so that the voltage at TP1001 is 9.1 \pm 0.05V DC.
- 5. Connect the DVM to TP1002 on the same section.
- 6. Adjust the +5V (R1030) so that the voltage at TP1002 is $5.1 \pm 0.05V$ DC.
- 7. Remove the DVM.

2-2. System Control Section

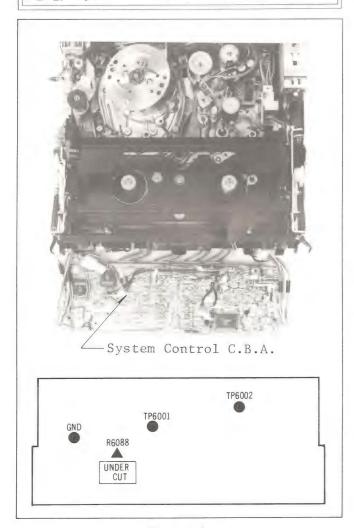


Fig. E4

2-2-1. Under Cut Adjustment

Test Point: TP6001

Adjustment: R6088 (UNDER CUT)

- 1. Supply a video signal to the video input on the right side panel.
- 2. Don't connect the Multi-connector to the deck.
- 3. Turn the UNDER CUT (R6088) fully clock-wise from foil side.
- 4. Connect the DC Voltage Regulator to the battery terminal of the deck and set the voltage to 12V DC \pm 0.1V DC.

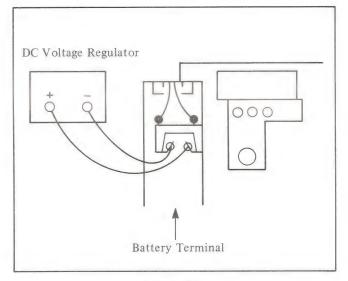


Fig. E5

- 5. Connect the DVM to the battery terminal of the deck.
- 6. Turn on the power switch of the deck.
- 7. Insert a cassette and make a recording.
- 8. Adjust the DC Voltage Regulator so that the voltage is 10.3 V DC \pm 0.04V DC.
- 9. Then, slowly turn the UNDER CUT (R6088) on the system control section counter-clockwise until the unit is placed in the STOP mode.
- 10. Confirm that the "b" mark is indicated (flash) on the LCD counter for three seconds.

Then the power switch of the deck is automatically turned OFF.

2-3. Servo Section

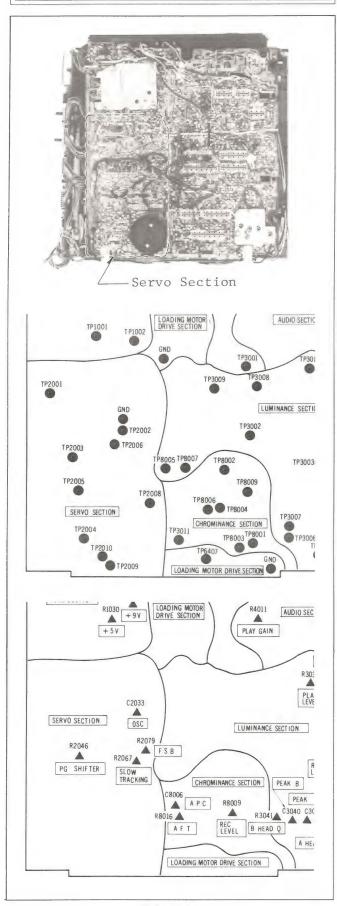


Fig. E6

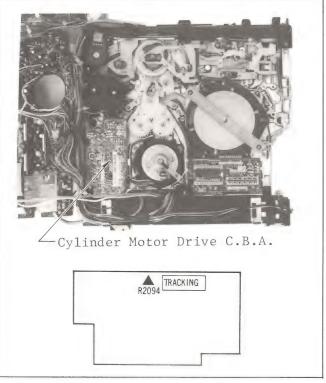


Fig. E7

2-3-1. 3.58MHz Crystal Oscillator Adjustment

Test Point: TP2006

Adjustment: C2033 (3.58 OSC)

- Don't supply any video signal to the video input on the right side panel. (Don't use the any Tuner unit)
- 2. Set the STOP mode.
- 3. Connect the scope to TP2006 on the servo section and set to DC Mode.
- 4. Confirm that the waveform as shown below.

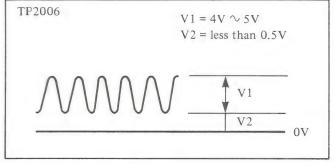


Fig. E8

- 5. Connect the frequency counter TP2006 on the same section.
- 6. Adjust the 3.58 OSC (C2033) so that the frequency is $3.579545 \mathrm{MHz} \pm 10 \mathrm{Hz}$.
- 7. Remove the frequency counter.

2-3-2. Head Switching Position Adjustment

Test Points: TP2003, TP3009 Adjustment: R2046 (PG SHIFT)

- 1. Connect the Multi-connector to the deck so that +12V is supplied to the deck.
- 2. Playback the color bar section of alignment tape.
- 3. Connect the scope CH1 to TP3009 on the Luminance section and CH2 to TP2003 on the servo section.
- 4. Set the scope to the CHOP mode.
- 5. Also set the scope to the Delay mode or expand the vertical interval of the signal from TP3009.
- 6. Adjust the PG SHIFT (R2046) so that the playback head switching point is $6H \pm 1H$ before the start of vertical sync as shown below.

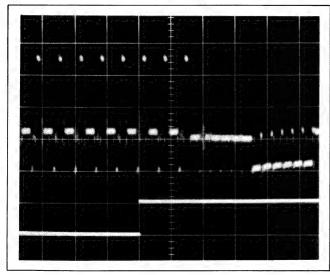


Fig. E9

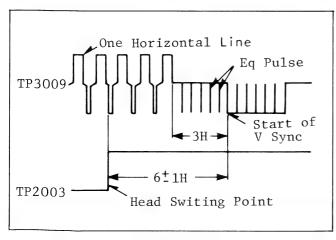


Fig. E10

7. Change the slope selector on the scope from "+" to "-" and make sure that the other switching point is also 6H ± 1H before the beginning of vertical sync.

2-3-3. Tracking Control Adjustment

Test Points: TP2003, TP2005 Adjustment: R6524 (SUB-TRACKING)

- Connect the Multi-connector to the deck and supply a video signal on the right side panel or tune in a local on-air TV program.
- 2. Set the tracking control on the right side panel to the center position.
- Insert a cassette and make a recording in the SP mode for a few minutes.
- 4. Playback the portion just recorded.
- 5. Connect the scope CH1 to TP2003 and CH2 to TP2005 on the servo section and expand sweep.
- 6. Adjust the SUB-TRACKING (R6524) on the jack panel section so that the T period becomes 0.4 ± 0.4 msec.

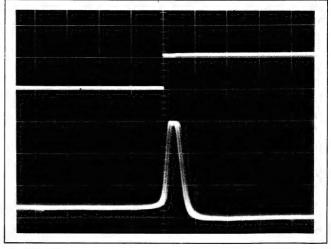


Fig. Ell

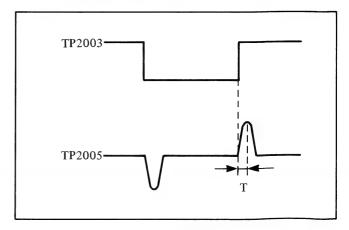


Fig. E12

2-3-4. Insert Tracking Adjustment

Test Points: TP2003, TP2005

Adjustment: R2094 (INSERT TRACKING CONTROL)

- Connect the Multi-connector to the deck and supply a video signal on the right side panel or tune in a local on-air TV program.
- 2. Insert a cassette and make a recording in the SP mode for a few minutes.
- 3. Playback the portion just recorded.
- 4. Connect the scope CH1 to TP2003 and CH2 to TP2005 on the servo section.
- 5. Push the Pause/Still button.
- 6. Then push the RECORD button and simultaneously the Audio Dub button on the front panel.
- 7. Push the Pause/Still button again.
- 8. Adjust the TRACKING (R2094) on the CYLINDER DRIVE Board so that the "T" is 0.4 ± 0.4 msec.

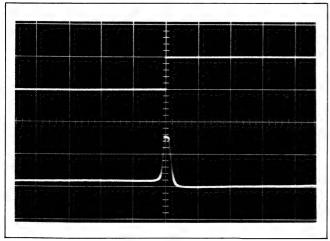


Fig. E13

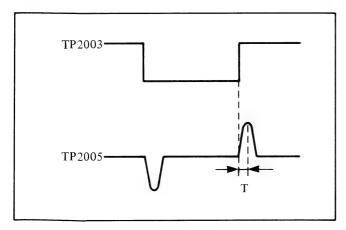


Fig. E14

2-3-5. Slow Servo Sampling Gate Adjustment

Test Point: TP2001

Adjustment: R2067 (FS FR)

- Connect the Multi-connector to the deck and supply a video signal on the right side panel or tune in a local on-air TV program.
- 2. Insert a cassette and make a recording in the SLP mode for a few minutes.
- 3. Playback the portion just recorded.
- 4. Push the slow button on the front panel
- 5. Disconnect P28, Slow Tracking Control from the P.C.B.
- 6. Connect the frequency counter to TP2001 on servo section.
- 7. Adjust the FS FR (R2067) so that the frequency is $580 \text{Hz} \pm 10 \text{Hz}$.
- 8. Remove the frequency counter.
- 9. Connect the connector (P28).

2-3-6. Slow Brake Adjustment

Test Points: TP2008, TP2004 Adjustment: R2079 (FS B)

- Connect the Multi-connector to the deck and supply a video signal on the right side panel or tune in a local TV program.
- 2. Insert a cassette and make a recording in the SLP mode for a few minutes.
- 3. Playback the portion just recorded.
- 4. Activate slow mode.
- 5. Connect the scope CH1 to TP2008 and CH2 to TP2004 on the servo section. Set the scope to the CHOP mode.
- 6. Adjust the Fine Slow Brake (R2079) so that the V portion is as shown below.

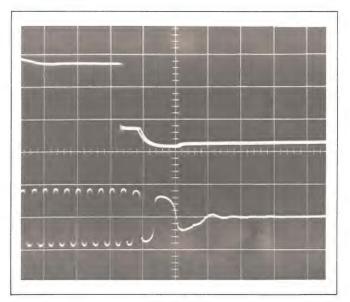


Fig. E15

7. In case of misadjustment, A-portion is as follows.

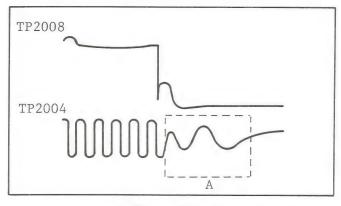


Fig. E16

2-4. Audio Section

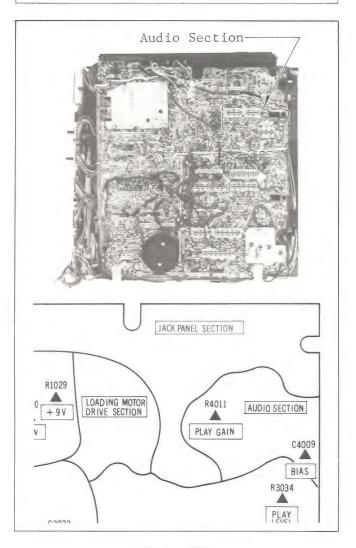


Fig. E17

2-4-1. Bias Current Adjustment

Test Point: Audio Head Terminal Adjustment: C4009 (BIAS ADJ)

- Don't supply any Audio signal to the MIC IN JACK on the right side panel. (Don't use the any Tuner unit).
- 2. Insert a cassette and make a recording in the SP mode.
- 3. Connect the AC Millivolt Meter as shown Fig. E18.

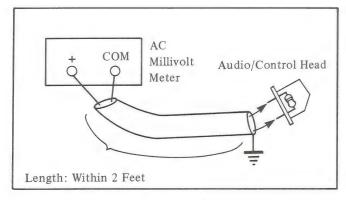


Fig. E18

4. Adjust the BIAS ADJ (C4009) so that the voltage is $1.2 \pm 0.05 \,\mathrm{mVrms}$.

2-4-2. Playback Gain Adjustment

Test Point: Audio Out Jack Adjustment: R4011 (P.B GAIN)

- 1. Supply a sinewave signal (1kHz and 5kHz -30dB 89mVp-p) to the MIC IN jack on the jack panel section. Using accessory of audio input attenuator as shown Fig. E19
- Supply a video signal to the video input on the right side panel.

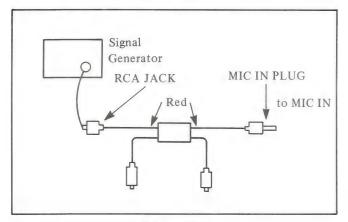


Fig. E19

- 3. Connect the DVM to audio out jack on the jack panel section.
- 4. Insert a cassette and make a recording lkHz first then 5kHz signal in the SP mode, read the voltage of lkHz.
- 5. Playback the portion just recorded.
- 6. Adjust the P.B GAIN (R4011) so that the voltage of lkHz playback is equal to that of recording.
- 7. Confirm that the voltage of 5kHz and 1kHz are balanced.

2-5. Video Section

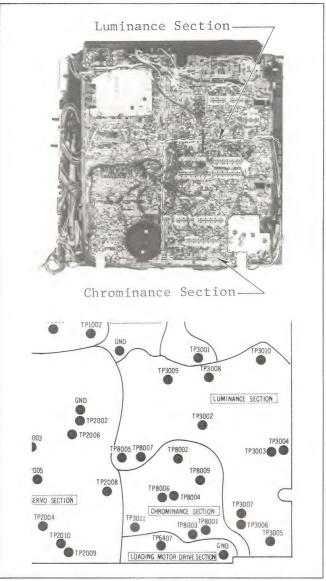


Fig. E20

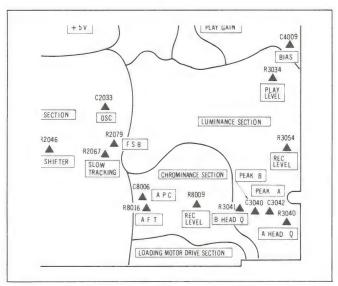


Fig. E21

2-5-1. Head Amp Peak Frequency Adjustment

Test Point: TP8001

Adjustments: C3040 (PEAK-B), C3042 (PEAK-A)

- A. Factory Adjustment
- Don't supply any video signal to the video input on the right side panel. (Don't use the any Tuner unit)
- 2. Turn controls as follows (all controls are on the Luminance section.) R3040 Fully clockwise (from foil side) R3041 Fully Counter Clockwise (from foil side)
- 3. Connect the sweep generator to TP3005 on the Luminance section. And put the marker on 4.5MHz.
- 4. Cover the supply and takeup photo transistors with two pieces of black paper and place the unit in the PLAY/PAUSE mode without a tape.
- 5. Connect the scope to TP8001 on the chrominance section.
- 6. Adjust the level of sweep generator to $200 \pm 50 \text{mVp-p}$ at 4.5MHz on TP8001.
- 7. Adjust the PEAK-B (C3040) and the PEAK-A (C3042) so that the peaks on the scope are 4.5MHz \pm 0.1MHz.

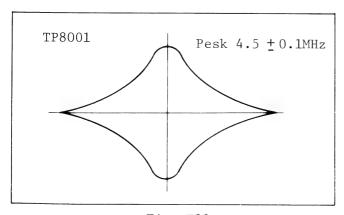


Fig. E22

B. Field Adjustment

- Don't supply any video signal to the video input on the right side panel. (Don't use the any tuner unit)
- 2. Turn controls as follows.
 R3040 Fully clockwise.
 (from foil side)
 R3041 Fully counter clockwise.
 (from foil side)
- 3. Connect the sinewave generator to TP3005 on the Luminance section.

- 4. Cover the supply and takeup photo transistors two pieces of black paper and place the unit in the PLAY/PAUSE mode without a tape.
- 5. Connect the scope to TP8001 on the chrominance section.
- 6. Adjust the PEAK-B (C3040) and the PEAK-A (C3042) so that the amplitude on the scope becomes maximum.

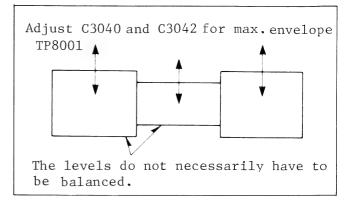


Fig. E23

2-5-2. Head Amp Frequency Response and Balance Adjustment

Test Point: TP3007

Adjustments: R3040 (Q-A), R3041 (Q-B)

A. Factory Adjustment

- 1. Supply the V sync from the sweep generator to the video input on the right side panel.
- 2. Connect a jumper between TP3003 and GND on the luminance section.
- 3. Connect the sweep generator to TP3004 on the same section.

 Put the marker on 2MHz, 3.4MHz and
- 4. Connect the scope to TP3007 (HOT) and TP3006 (GND).
- 5. Insert a cassette and make a recording in the SP mode for a few minutes.
- 6. Adjust the level of sweep generator to 115mVp-p at 3.4MHz.

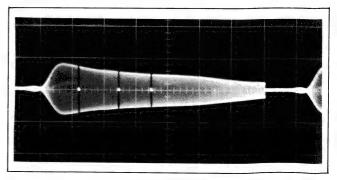


Fig. E24

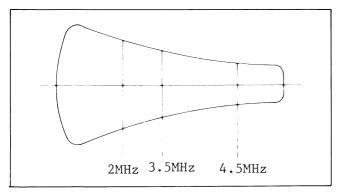


Fig. E25

- 7. Playback the portion just recorded.
- 8. Connect the scope to TP8001 on the chrominance section.
 Trigger the scope from TP3010.
- 9. Connect the jumper between TP3007 and $\ensuremath{\mathsf{GND}}\xspace$
- 10. Expand the CH-B envelope.
- 11. Adjust the A HEAD Q (R3040) so that the levels at 2MHz and 4.5MHz are balanced.

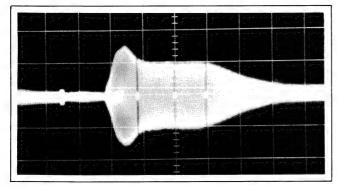


Fig. E26

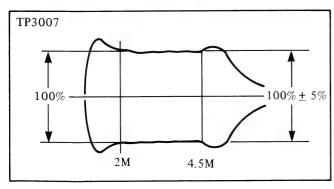


Fig. E27

- 12. Change the jumper from TP3007 to TP3005.
- 13. Expand the CH-A envelope.
- 14. Adjust the B HEAD Q (R3041) so that the levels at 2MHz and 4.5MHz are balanced.
- 15. Remove the jumper from TP3005 and TP3003.

- B. Field Adjustment
- 1. Connect the multi-connector to the deck and supply a video signal or tune in a local on-air TV program.
- 2. Connect a jumper between TP3003 and GND on the Luminance section.
- 3. Connect the sinewave generator to TP3004 on the same section.
- 4. Set the frequency of the sinewave generator to 3.4MHz.
- 5. Connect the scope between TP3007 (HOT) and TP3006 (GND).
- 6. Insert a cassette, and make a recording in the SP mode for a few minutes.
- 7. Adjust the output level of the sinewave generator so that the peak-to-peak level on TP3007 is 115mVp-p.
- 8. Change the frequency of the sinewave generator from 3.4MHz to 2.0MHz and make a recording for about 10 seconds.
- 9. Then, change the frequency from 2.0MHz to 4.5MHz and make a recording for about 10 seconds.
- 10. Repeat about steps 8 and 9 for a couple of times.
- 11. Playback the portion just recorded.
- 12. Connect the scope to TP8001 on the chrominance section.
 Trigger the scope from TP3010.
- 13. Connect the jumper between TP3007 and $\ensuremath{\mathsf{GND}}$.
- 14. Adjust the A HEAD Q (R3040) so that the levels at 2MHz and 4.5MHz are balanced.
- 15. Change the jumper from TP3007 to TP3005.
- 16. Adjust the B HEAD Q (R3041) so that the levels at 2MHz and 4.5MHz are balanced.
- 17. Remove the jumper from TP3005 and TP3003.

2-5-3. Recording Current Adjustment

Test Point: TP3007

Adjustments: R3054 (REC CURR), R8009 (REC

CHROMA)

- 1. Connect the Multi-connector to the deck and supply a video signal or tune in a local on-air TV program.
- 2. Insert a cassette and make a recording in the SP mode.
- 3. Connect the scope to TP3007 (HOT) and TP3006 (GND) on the luminance section.
- 4. Turn the REC CURR (R3054) to fully clockwise from foil side.
- 5. Adjust the REC CHROMA (R8009) on the chrominance section so that the level of syan portion is $28 \pm 3 \text{mVp-p}$.

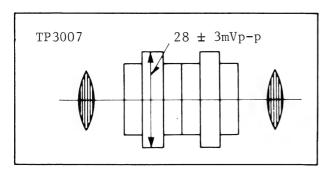


Fig. E28

6. Then slowly turn the REC CURR (R3054) on the luminance section so that V sync portion of the envelope at TP3007 is $115 \pm 3 \text{mVp-p}$.

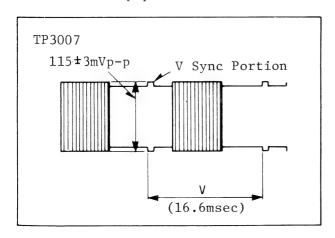


Fig. E29

2-5-4. Playback Level Adjustment

Test Point: TP3009

Adjustment: R3034 (P.B LEVEL)

- 1. Supply a color bar signal to the right side panel.
- 2. Insert a cassette and make a recording in the SP mode for a few minutes.
- 3. Connect the scope to TP3009 on the luminance section.
- 4. Playback the portion just recorded.
- 5. During playback, adjust the P.B LEVEL (R3034) so that the video level is 2.0 ± 0.1Vp-p.
- 6. Confirm that the chroma level is 1.2 \pm 0.2Vp-p.

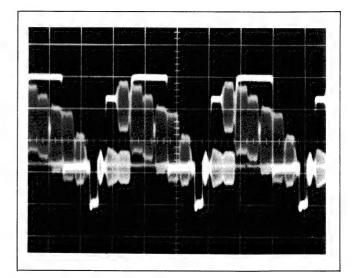


Fig. E30

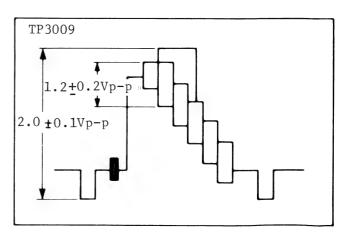


Fig. E31

2-5-4. APC 3.58MHz VXO Adjustment

Test Point: TP8007 Adjustment: R8006 (APC)

- Connect teh Multi-connector to the deck and supply a video signal or tune in a local on-air TV program.
- Connect a jumper between TP8003 and GND.
- 3. Connect a $18k\Omega$ resistor between TP8006 and GND.
- 4. Connect a $39k\Omega$ resistor between TP8004 and GND.
- 5. Place the unit in STOP mode.
- 6. Connect the frequency counter to TP8007.
- 7. Adjust the APC (R8006) on the chrominance section so that the frequency is 3.979545 ± 10Hz.
- 8. Remove the Frequency counter.

2-5-6. AFC Adjustment

Test Point: TP8005

Adjustment: R8016 (AFC/AFT)

- Don't supply any video signal to the video input on the right side panel. (Don't use the any Tuner unit.)
- 2. Connect a frequency counter to TP8005 on the Chrominance section.
- Insert a cassette and make a recording.
- 4. Adjust the AFC/AFT (R8016) on the chrominance section so that the frequency is 15.734kHz \pm 200Hz.
- 5. Remove the frequency counter.

2-6. WIRED REMOTE CONTROL UNIT SECTION

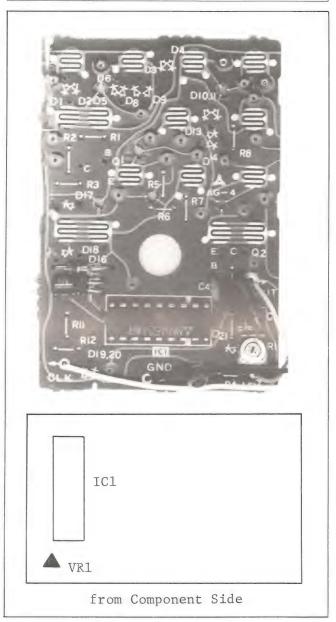


Fig. E32

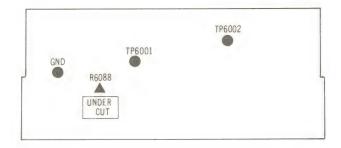
2-6-1. MICROPROCESSOR CLOCK FREQUENCY ADJUSTMENT

- 1. Connect the WIRED REMOTE CONTROL UNIT to the deck.
- 2. Connect the frequency counter to PIN18 of IC1.
- 3. Adjust the VR1 so the frequency is $25 \text{KHz} \pm 0.2 \text{KHz}$.

LOCATION OF TEST POINT & CONTROLS

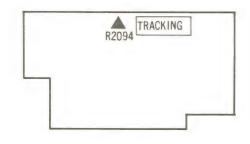
MAIN C.B.A. (VEPS0317A) JACK PANEL SECTION A.V.R. SECTION AUDIO SECTION TP1001 TP2001 LUMINANCE SECTION TP3002 ■ TP2002 A.V.R Section Audio Section TP2006 TP3004 TP8009 SERVO SECTION NANCE SECTION TP2004 TP2009 LOADING MOTOR DRIVE SECTION R6524 TRACKING JACK PANEL SECTION SUB-TRACKNG R1029 A.V.R. SECTION R1030 + 9 V LOADING MOTOR DRIVE SECTION AUDIO SECTION Servo Section + 5 V PLAY GAIN Chrominance Section-BIAS R3034 Luminance Section -PL AY LEVEL C2033 OSC SERVO SECTION LUMINANCE SECTION R2046 R2067 PG SHIFTER PEAK A R8009 C3040 C3042 R8016 📤 REC LEVEL AFT B HEAD Q A HEAD Q LOADING MOTOR DRIVE SECTION

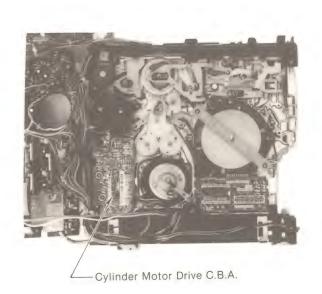
SYSTEM CONTROL C.B.A. (VEPS0648A)





CYLINDER MOTOR DRIVE C.B.A. (VEPS0227A)





Service Manua

Vol. 3

Block Diagrams

Portable Video Cassette Recorder Panasonic VHS



SPECIFICATIONS

Power Source: 12 VDC

> Battery LCS-2012P Elec. Tuner Unit PV-A200 Prog. Tuner Unit PV-A500 Multiple AC Adaptor PV-A100 Plug-in AC Adaptor PV-A110 Approx. 7W at Play mode

Power Consumption: Television System: EIA Standard (525 lines, 60 fields)

NTSC color signal

Video Recording

System: 2 rotary heads helical scanning system

Luminance: FM azimuth recording Chrominance: Converted subcarrier phase shift recording

Audio Track: 1 track

Tape Format: Tape width 1/2" (12.7 mm), high density

Tape Speed: SP mode: 1-5/16 i.p.s (33.35 mm/s)

LP mode: 21/32 i.p.s (16.67 mm/s) SLP mode: 7/16 i.p.s (11.12 mm/s)

Record/Playback Time: 360 min. with NV-T120 used in SLP

mode

FF/REW Time: Less than 6 min. with NV-T120 Heads: Video: 2 Rotary heads

Audio/Control: 1 stationary head

Erase: 1 full track erase

1 audio track erase for audio

dubbing

Input Level: Video: VIDEO IN Jack (RCA type)

 $1.0\,\mathrm{Vp}$ -p, $75\,\Omega$ unbalanced

Audio: MIC IN Jack

 $-70\,dB$, 600Ω unbalanced

Video: VIDEO OUT Jack (RCA type) Output Level:

 $1.0\,\mathrm{Vp}$ -p, 75Ω unbalanced

Audio: AUDIO OUT Jack (RCA type)

6dB, 600Ω unbalanced

RF Modulated: Ch3/Ch4 switchable,

 $72 dB\mu$ (open voltage), 75Ω unbalanced

Video Horizontal

Resolution: More than 230 lines

Audio Frequency

Response: SP: 100 Hz~8kHz, $(10 dB down) LP: 100 Hz \sim 6 kHz,$

SLP: $150 \,\mathrm{Hz} \sim 5 \,\mathrm{kHz}$

Signal-to-Noise Ratio: Video: SP mode: better than 40dB

LP mode: better than 40dB SLP mode: better than 40dB (Rohde & Schwarz noise meter) Audio: SP mode: better than 42dB

LP mode: better than 40 dB SLP mode: better than 40dB

Operating

Temperature: $32^{\circ}F \sim 104^{\circ}F$ ($0^{\circ}C \sim 40^{\circ}C$)

Operating Humidity: $10\% \sim 75\%$

8.4 lbs (3.8kg) (with internal battery pack) Weight:

Dimensions: $9-3/8 \text{ "(W)} \times 3-5/8 \text{ "(H)} \times 9-9/16 \text{ "(D)}$

 $238(W) \times 92.5(H) \times 242(D) mm$

Weight and dimensions shown are approximate. Specifications are subject to change without notice.

Panasonic_a

Panasonic Company Division of Matsushita Electric Corporation of America
One Panasonic Way, Secaucus, New Jersey 07094

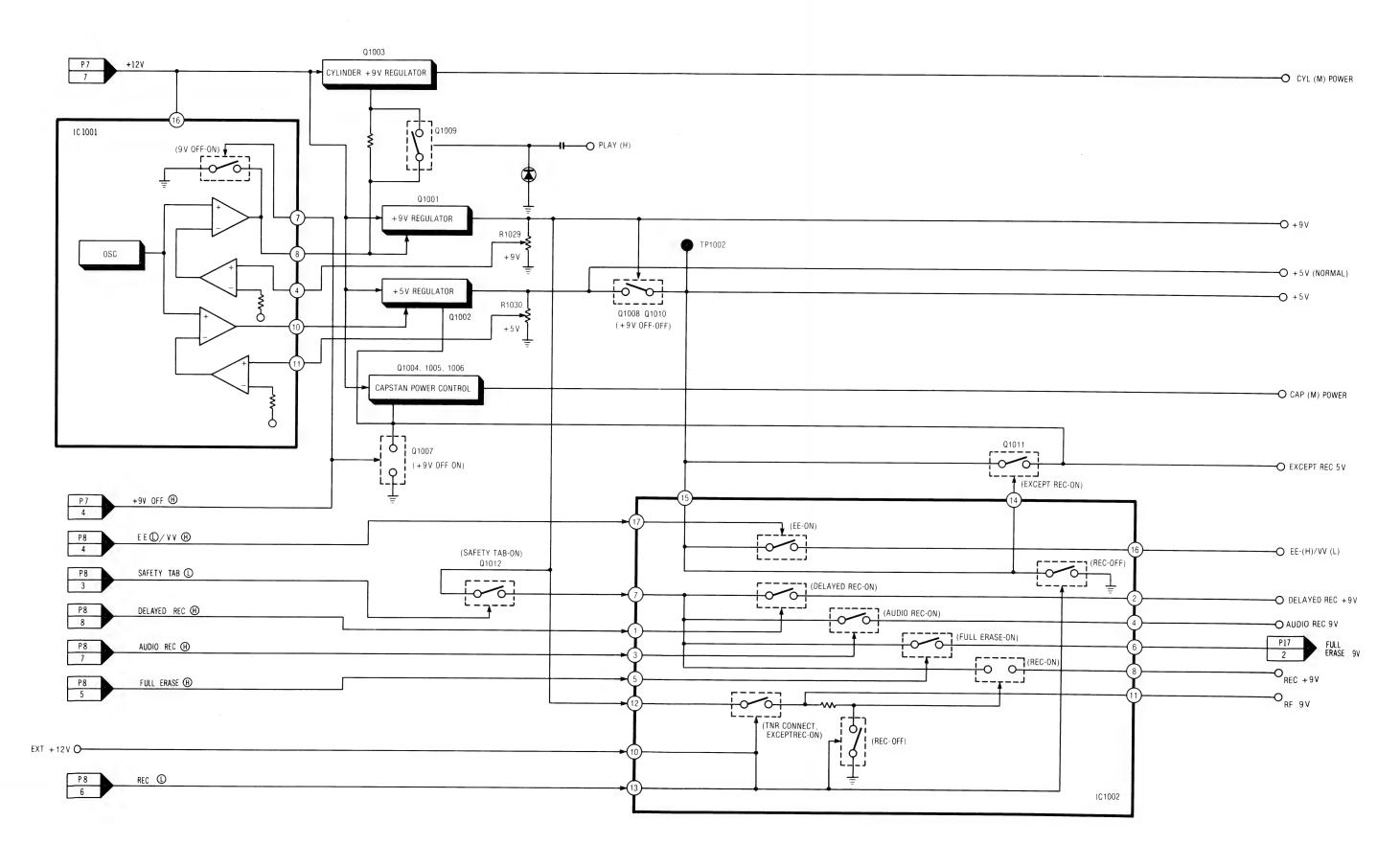
Panasonic Hawaii Inc 91-238 Kauhi St. Ewa Beach Honolulu, Hawaii 96808-0774

Panasonic Canada Division of Matsushita Electric of Canada Limited 5770 Ambler Drive, Mississauga, Ontario, L4W 2T3 Panasonic Sales Company, Division of Matsushita Electric of Puerto Rico, Inc. Ave, 65 De Infanteria, KM 9.7 Victoria Industrial Park Carolina, Puerto Rico 00630

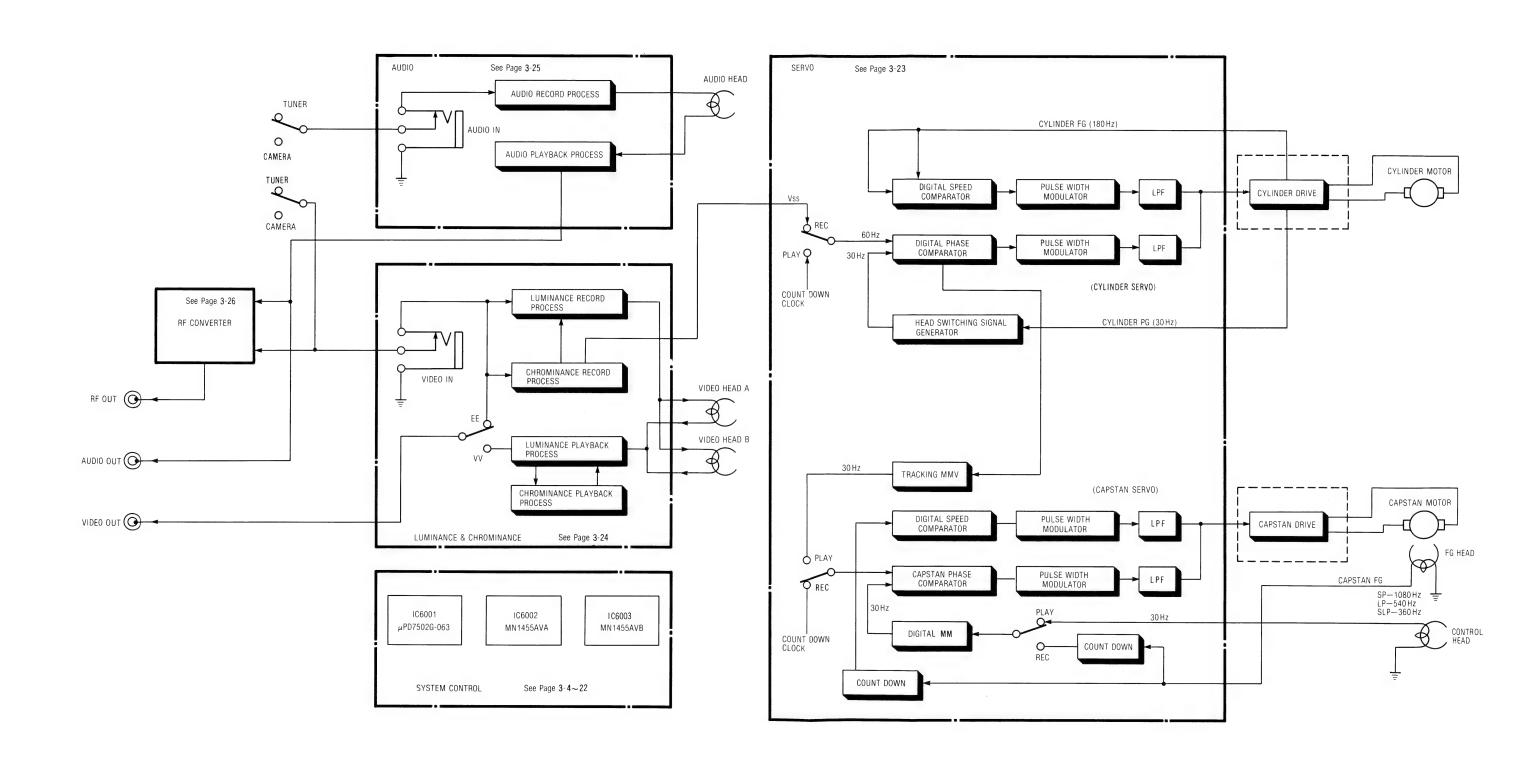
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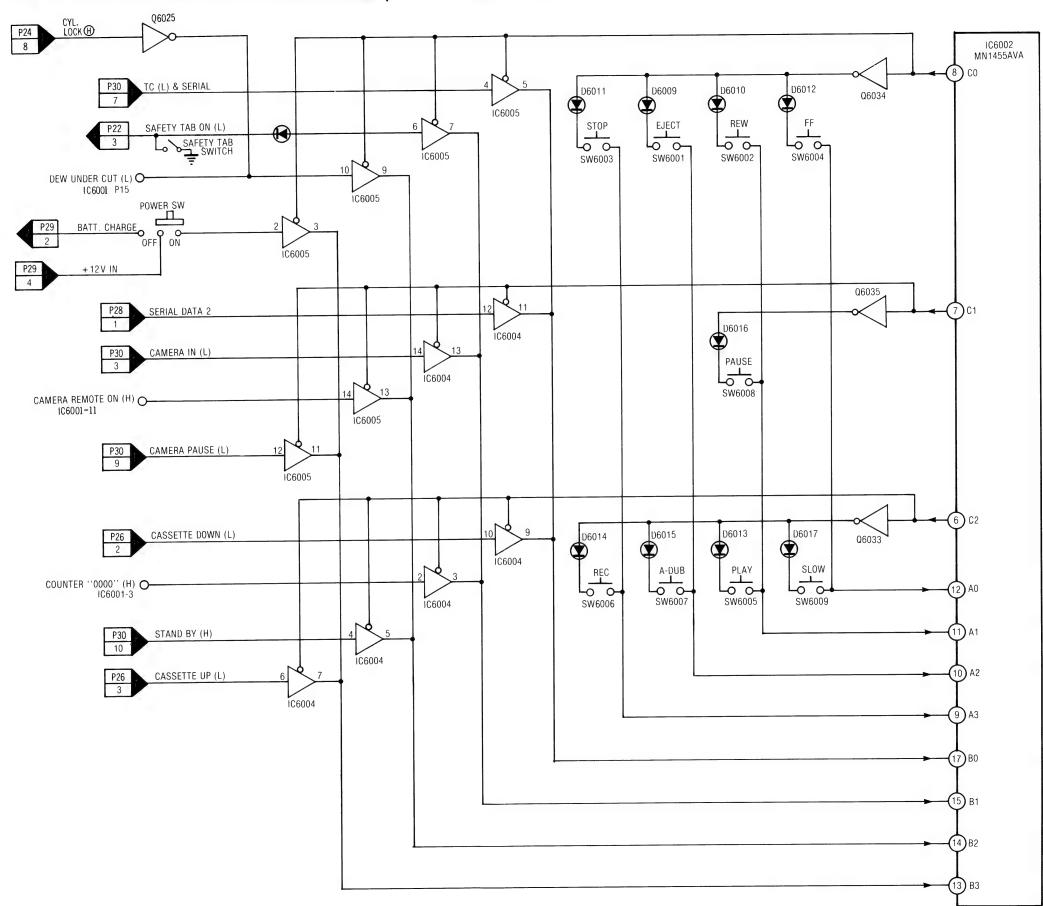
A.V.R CIRCUIT BLOCK DIAGRAM



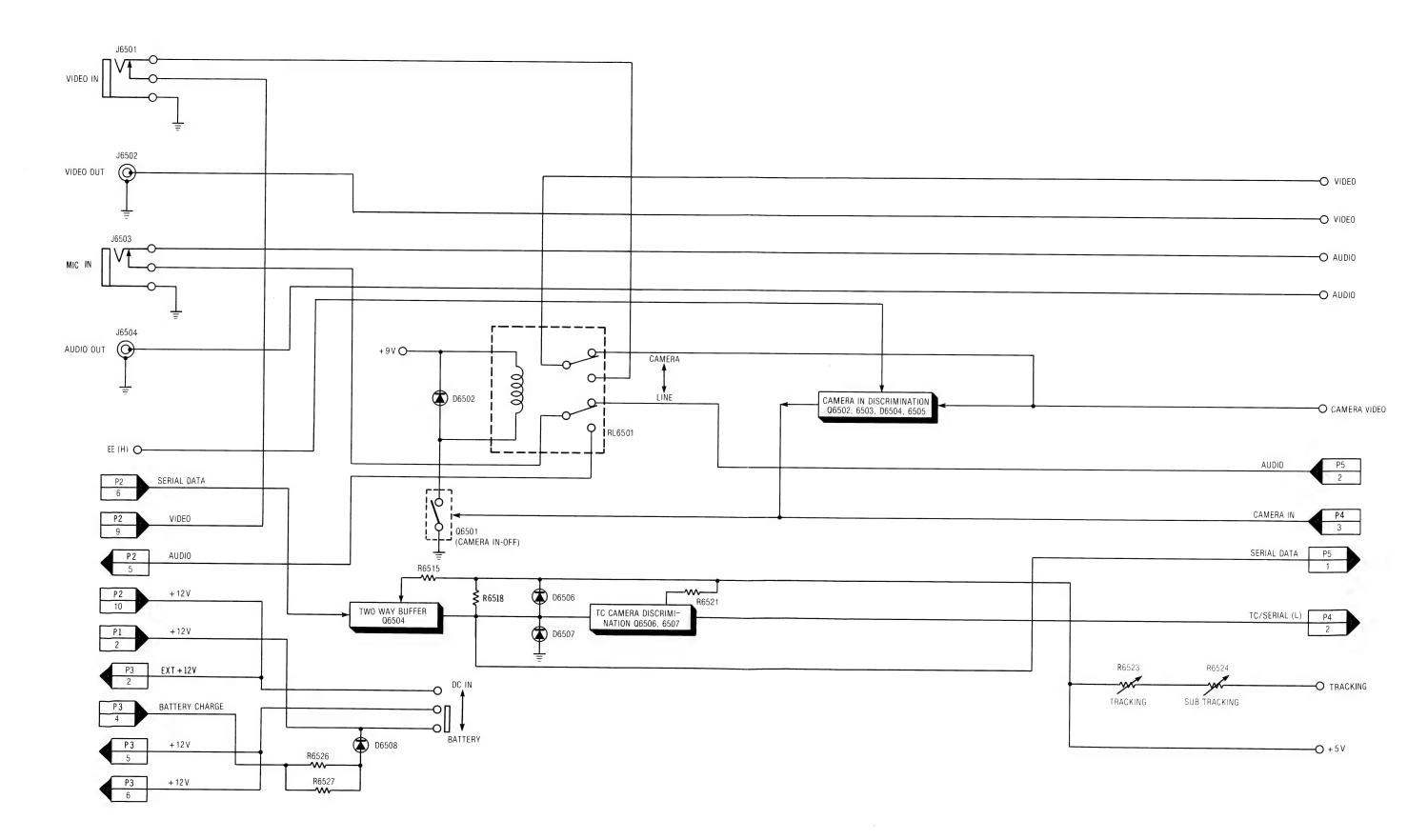
OVERALL BLOCK DIAGRAM



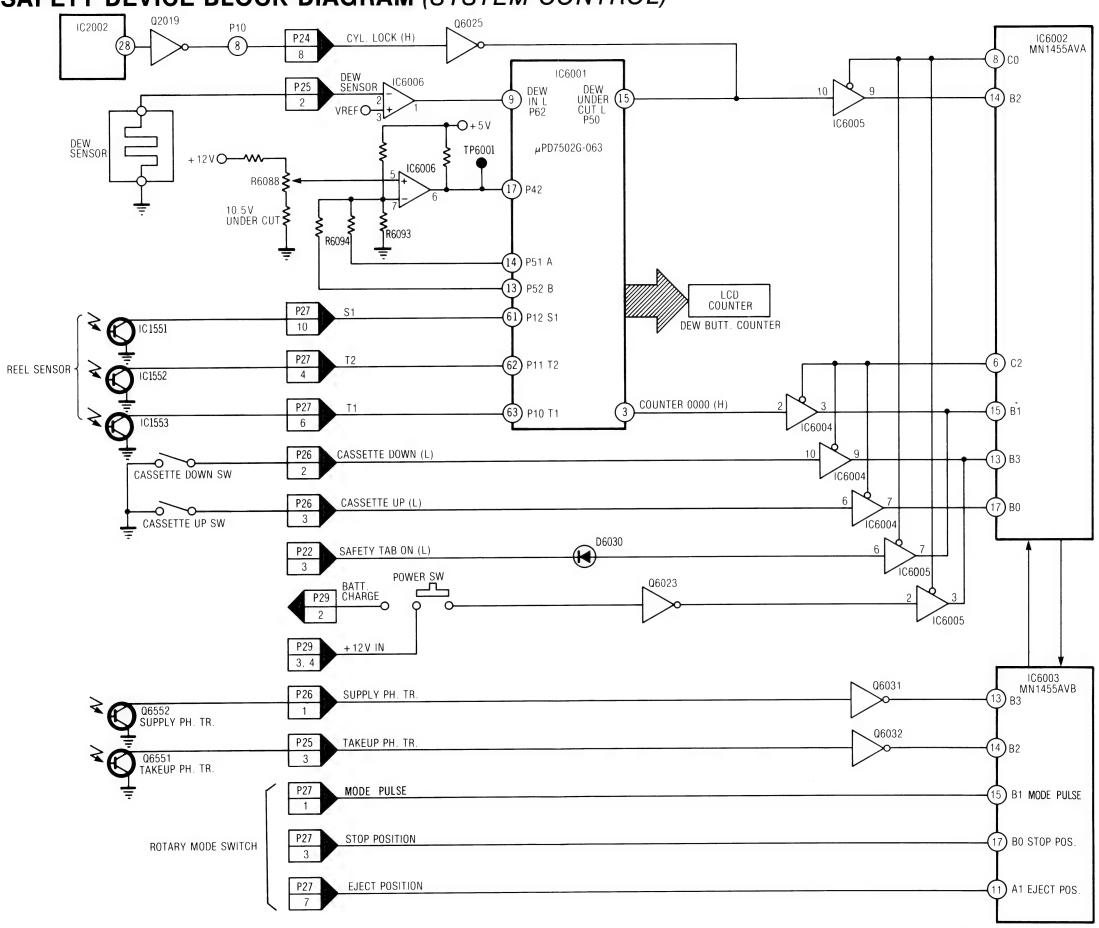
KEY MATRIX BLOCK DIAGRAM (SYSTEM CONTROL)



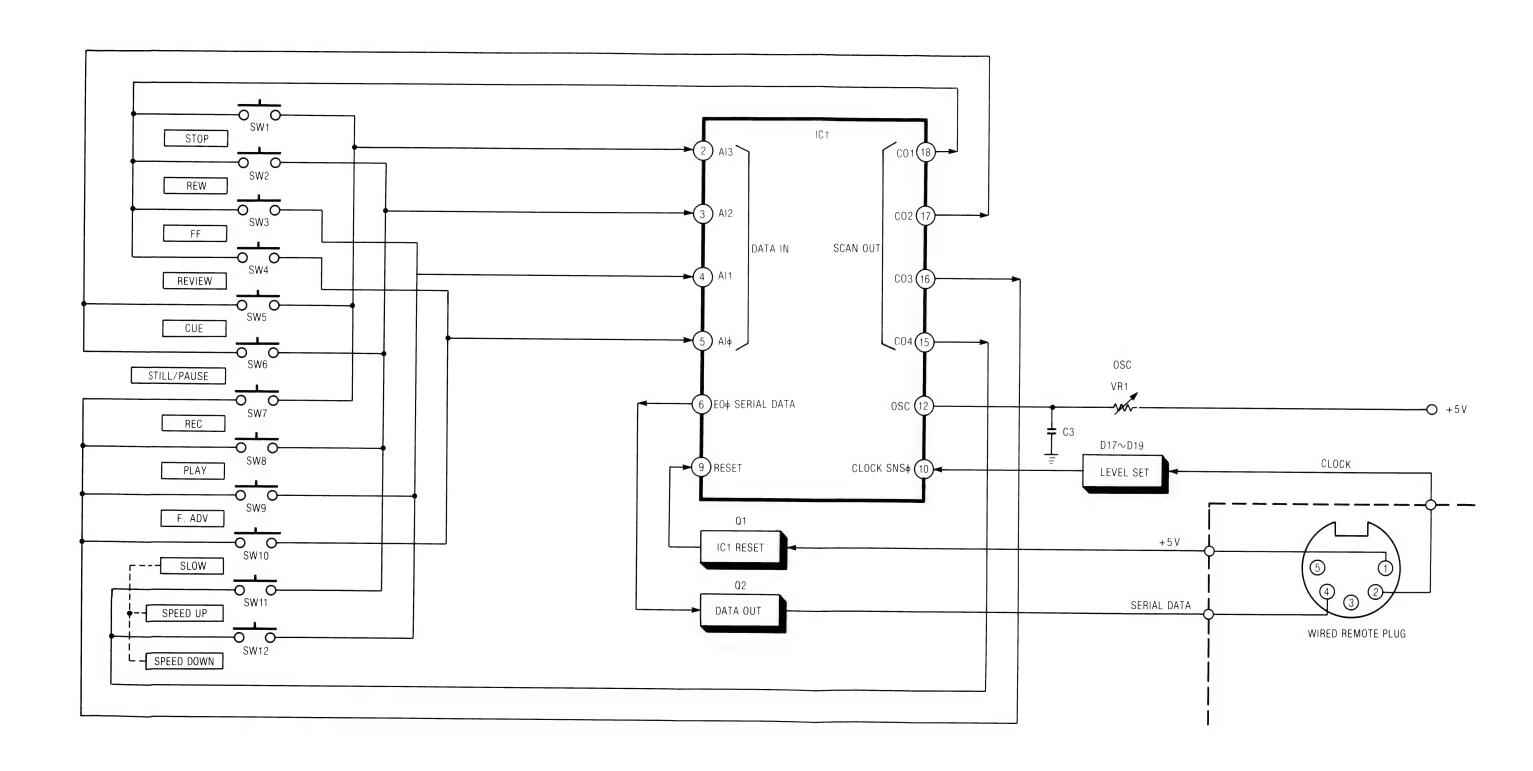
JACK PANEL BLOCK DIAGRAM



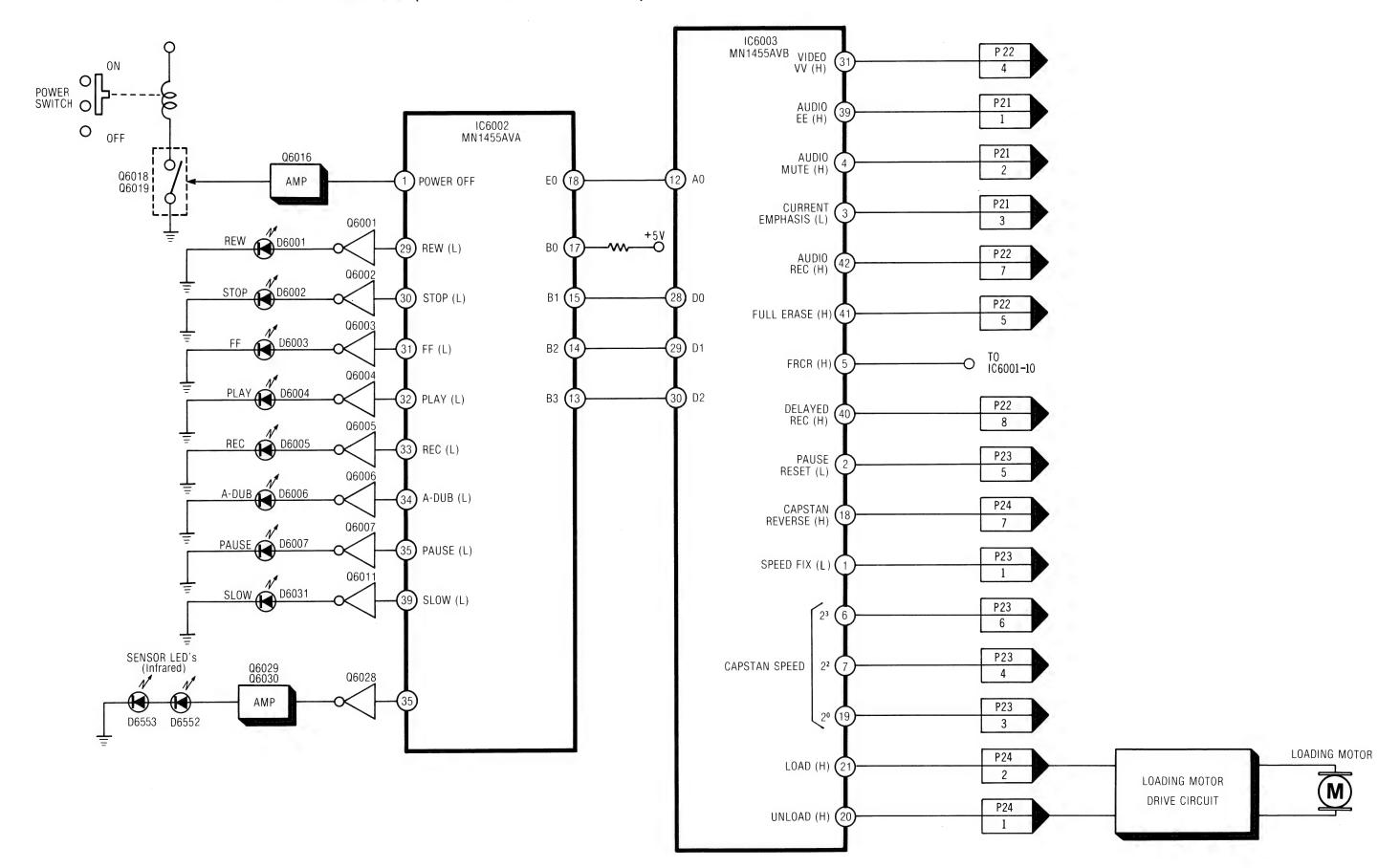
SAFETY DEVICE BLOCK DIAGRAM (SYSTEM CONTROL)



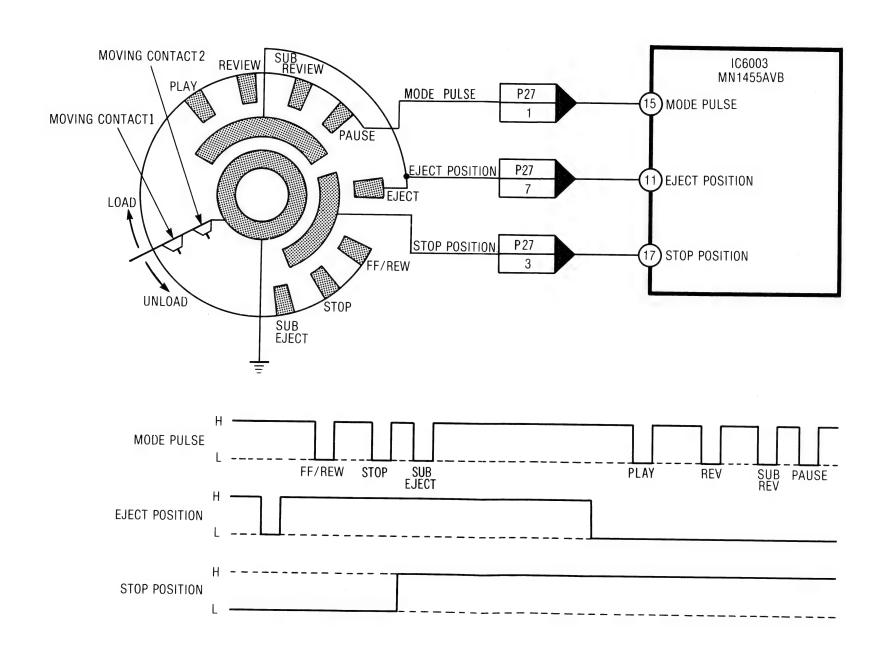
WIRED REMOTE CONTROL BLOCK DIAGRAM



DRIVE SIGNAL BLOCK DIAGRAM (SYSTEM CONTROL)



MODE SELECT SWITCH BLOCK DIAGRAM (SYSTEM CONTROL)



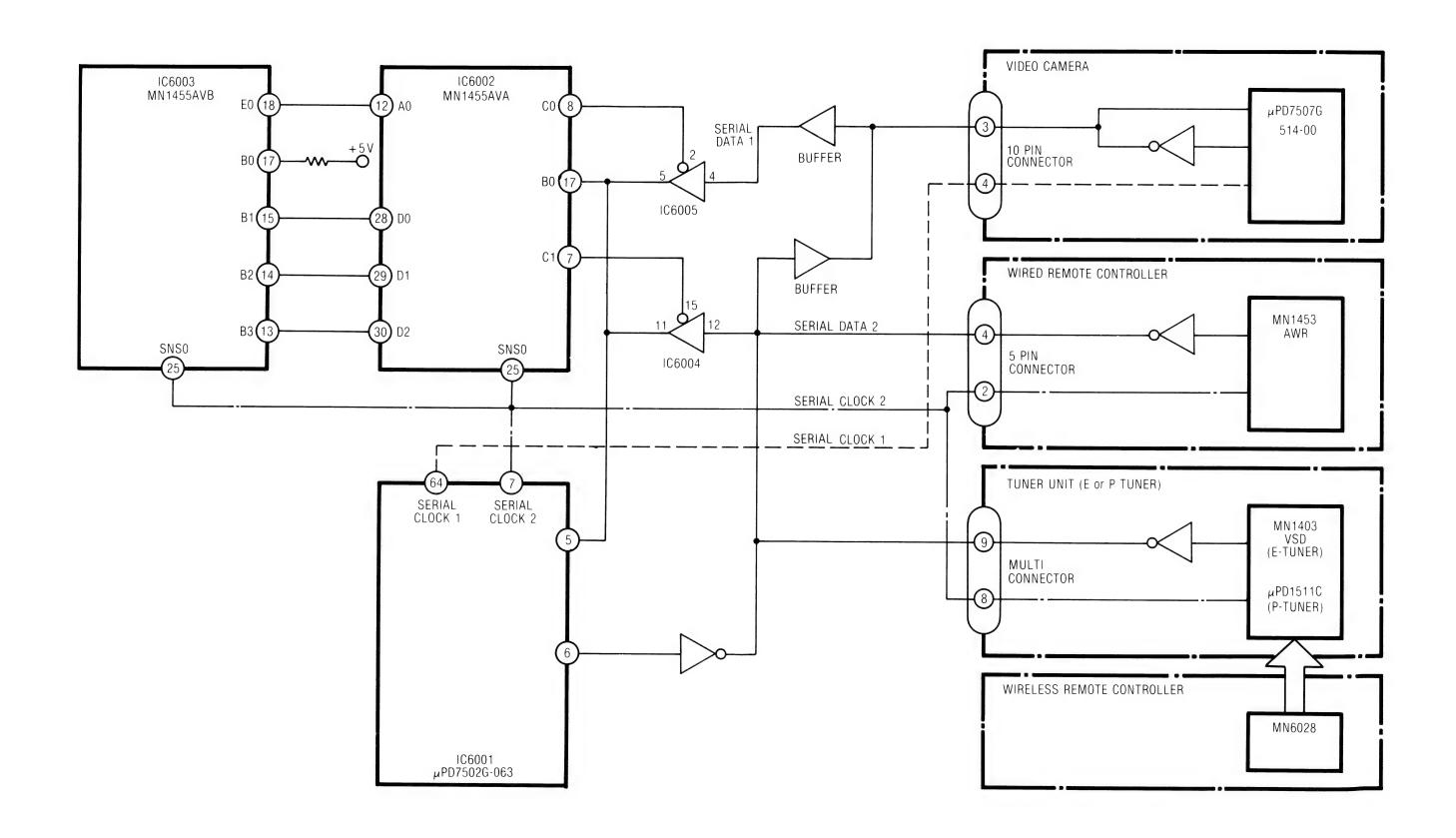
μ PD7502G-063 I/O

PIN	NAME	I/O	OPERATION	
1	_	_	_	
2	P32	OUTPUT	REEL LOCK	
3	P31	OUTPUT	COWNTOR 0000: (H)	
4	P30	OUTPUT	SERIAL CLOCK 2	
5	P03	INPUT	SERIAL DATA IN	
6	P02	OUTPUT	SERIAL DATA OUT	
7	P01	OUTPUT	SERIAL CLOCK 2	
8	P63	OUTPUT	LCD OFF	
9	P62	INPUT	DEW IN (L)	
10	P61	INPUT	FRCR (FF/REW/CUE/REV) IN	
11	P60	INPUT	CAMERA REMOTE ON (H)	
12	P53	OUTPUT	REEL SENSOR LED ON	
13	P52	OUTPUT	BATTERY CHECK A	
14	P51	OUTPUT	BATTERY CHECK B	
15	P50	OUTPUT	TPUT AUTO STOP (L)	
16	P43	INPUT	TALLY IN	
17	P42	INPUT	BATTERY CHECK	
18	P41	INPUT	COUNTER OR MEMORY SW	
19	P40	INPUT	COUNTER CLEAR	
20	X2	_	_	
21	X1	INPUT	GND	
22	Vss	INPUT	GND	
23	VLC3	INPUT	+ 2 V	
24	VLC2	INPUT	+ 3 V	
25	VLC1	INPUT	+ 4 V	
26	VDD	INPUT	+5V	
27	СОМЗ	_	_	
28	COM2	OUTPUT	LCD DRIVE	
29	COM1	OUTPUT	LCD DRIVE	
30	СОМ0	OUTPUT	LCD DRIVE	
31	S23	_	_	
32	S22	-	_	
33	S21	-	-	

PIN	NAME	I/O	OPERATION
34	S20	_	_
35	S19	_	_
36	S18	_	_
37	S17	_	_
38	S16	_	_
39	S15	_	_
40	S14	_	_
41	S13	_	_
42	S12	OUTPUT	LCD DRIVE
43	S11	OUTPUT	LCD DRIVE
44	S10	OUTPUT	LCD DRIVE
45	S9	OUTPUT	LCD DRIVE
46	S8	OUTPUT	LCD DRIVE
47	S7	OUTPUT	LCD DRIVE
48	S6	OUTPUT	LCD DRIVE
49	S5	OUTPUT	LCD DRIVE
50	S4	OUTPUT	LCD DRIVE
51	S3	OUTPUT	LCD DRIVE
52	S2	OUTPUT	LCD DRIVE
53	S1	OUTPUT	LCD DRIVE
54	S0	OUTPUT	LCD DRIVE
55	INT1	_	GND
56	RESET	INPUT	RESET (H)
57	CL1	INPUT	REF 180kHz
58	VDD	INPUT	+ 5 V
59	CL2		_
60	P13	INPUT	POWER OFF
61	P12	INPUT	REEL SENSOR S1
62	P11	INPUT	REEL SENSOR T2
63	P10	INPUT	REEL SENSOR T1
64	P33	INPUT	SERIAL CLOCK 1

3—10

SERIAL DATA TRANSMISSION BLOCK DIAGRAM (SYSTEM CONTROL)

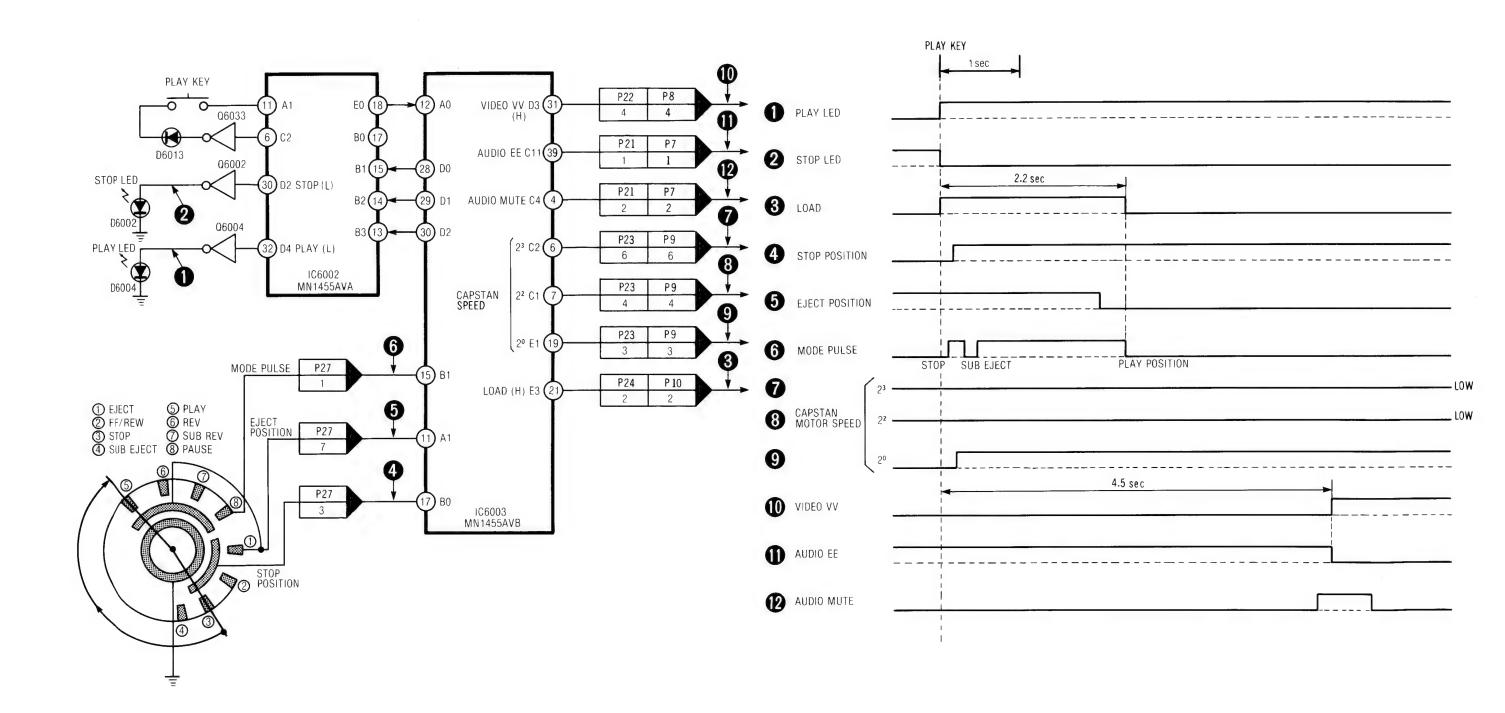


MN1455AVA I/O

PIN	NAME	1/0		OPERATION
1	C7	OUTPUT	POWER SW OF	F (H)
2	C6	_	_	
3	C5	ОИТРИТ	PRE POWER OF	FF (H)
4	C4	_	-	
5	C3	_	_	
6	C2	OUTPUT	C2 SCAN PULS	E
7	C1	OUTPUT	C1 SCAN PULS	E
8	C0	OUTPUT	C0 SCAN PULS	E
9	А3	INPUT	SCAN PULSE	OPERATION
			CO	STOP KEY
			C2	REC KEY
10	A2	INPUT	SCAN PULSE	OPERATION
			CO	EJECT KEY
			C2	A. DUB KEY
11	A1	INPUT	SCAN PULSE	OPERATION
			CO	REW KEY
			C1	PAUSE KEY
			C2	PLAY KEY
12	Α0	INPUT	SCAN PULSE	OPERATION
			CO	FF KEY
			C2	SLOW KEY
13	В3	INPUT	SCAN PULSE	OPERATION
			C0	POWER ON
			C1	CAMERA PAUSE
			C2	CASSETTE UP
			C3	ECHO FROM IC6003
14	B2	INPUT	SCAN PULSE	OPERATION
			C0	DEW DETECT
			C1	CAMERA REMOTE ON
			C2	CAMERA STANDBY
			C3	ECHO FROM IC6003

PIN	NAME	1/0		OPERATION
15	B1	INPUT	SCAN PULSE	OPERATION
			C0	SAFETY TAB
·			C1	CAMERA IN
			C2	COUNTER ZERO
			C3	ECHO FROM IC6003
16	_	_	_	
17	В0	INPUT	SCAN PULSE	OPERATION
		\	C0	SERIAL DATA 2
			C1	SERIAL CODE
			C2	CASSETTE UP
18	E0	OUTPUT	MODE INFORM	MATION TO IC6003
19	E1	_	_	
20	E2	_	_	
21	E3	OUTPUT	SERIAL DATA	1
22	TST	_	GND	
23	RST	INPUT	RESET (L)	
24	CSLT	INPUT	+5V	
25	SNS0	INPUT	SERIAL CLOCK	₹ 2
26	SNS1	INPUT	AUTO STOP F	ROM IC6001
27	_	_	_	
28	D0	OUTPUT	9V OFF (H)	
29	D1	OUTPUT	REW (L)	
30	D2	OUTPUT	STOP (L)	
31	D3	OUTPUT	FF (L)	
32	D4	OUTPUT	PLAY (L)	
33	D5	OUTPUT	REC (L)	
34	D6	OUTPUT	A. DUB (L)	
35	D7	OUTPUT	PAUSE (L)	
36	VDD	INPUT	+5V	
37	osc	INPUT	OSCILLATOR F	REF 900kHz

STOP → PLAY BLOCK DIAGRAM (SYSTEM CONTROL)



PIN	NAME	1/0	OPERATION
38	Vss	INPUT	GND
39	C11	OUTPUT	SLOW (L)
40	C10	OUTPUT	F. ADV/SLOW (H)
41	C9	OUTPUT	TALLY OUT
42	C8	_	_

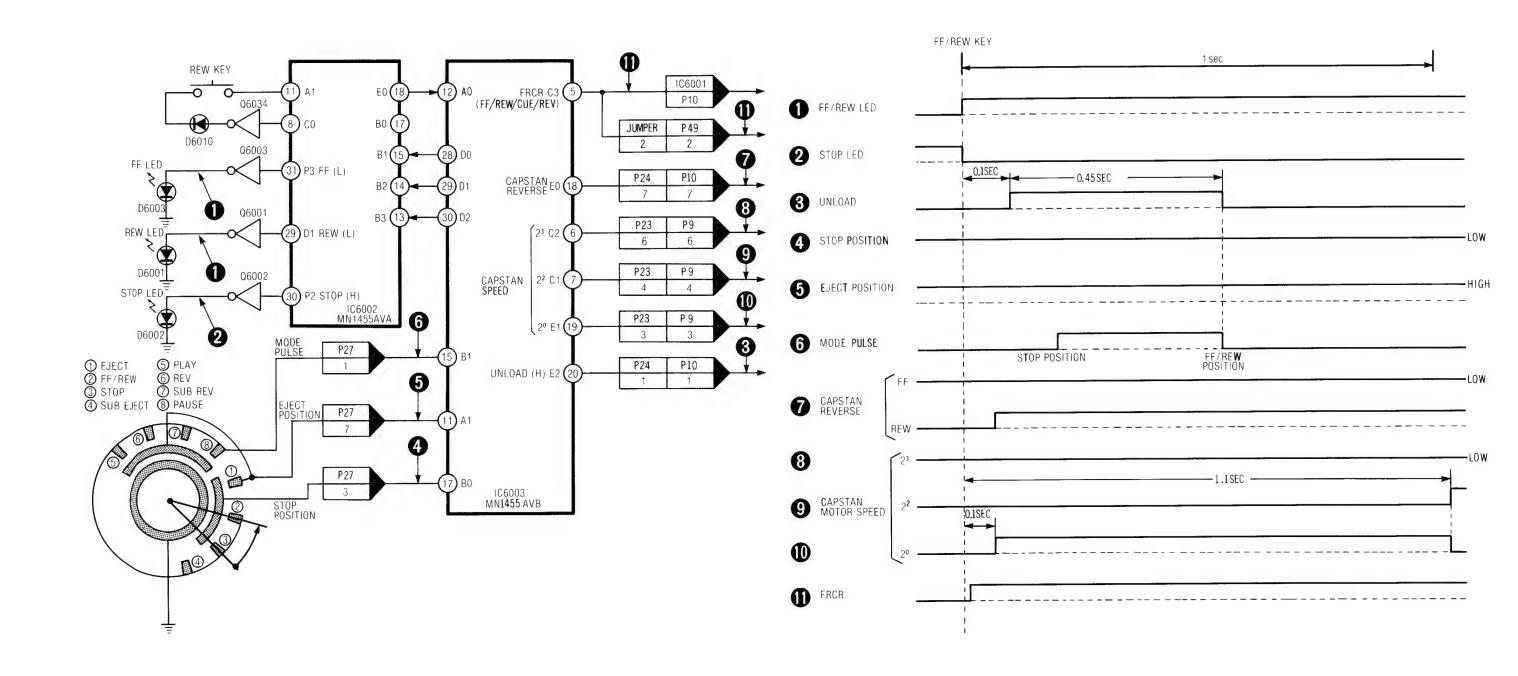
MN1455AVB I/O

PIN	NAME	I/O	OPERATION	
1	C7	OUTPUT	SPEED FIX (L)	
2	C6	OUTPUT	PAUSE RESET (L)	
3	C5	OUTPUT	CURRENT EMPHASIS (L)	
4	C4	OUTPUT	TPUT AUDIO MUTE (H)	
5	C3	OUTPUT	FRCR (FF/REW/CUE/REV) (H)	
6	C2	OUTPUT	CAPSTAN SPEED 2 ³	
7	C1	OUTPUT	CAPSTAN SPEED 2 ²	
8	C0	_	_	
9	А3	_	GND	
10	A2	INPUT	6H (H)	
11	A1	INPUT	EJECT POSITION (L)	
12	A0	INPUT	SERIAL DATA 2	
13	B3	INPUT	SUPPLY PHOTO TR ON DETECT	
14	B2	INPUT	TAKEUP PHOTO TR ON DETECT	
15	B1	INPUT	MODE PULSE	
16	_	_	_	
17	В0	INPUT	STOP POSITION (L)	
18	E0	OUTPUT	CAP REVERSE (H)	
19	E1	OUTPUT	TPUT CAPSTAN SPEED 2º	
20	E2	OUTPUT	TPUT UNLOADING (H)	
21	E3	OUTPUT	T LOADING (H)	
22	TST	_	GND	
23	RST	INPUT	RESET (L)	
24	CSLT	INPUT	+ 5 V	

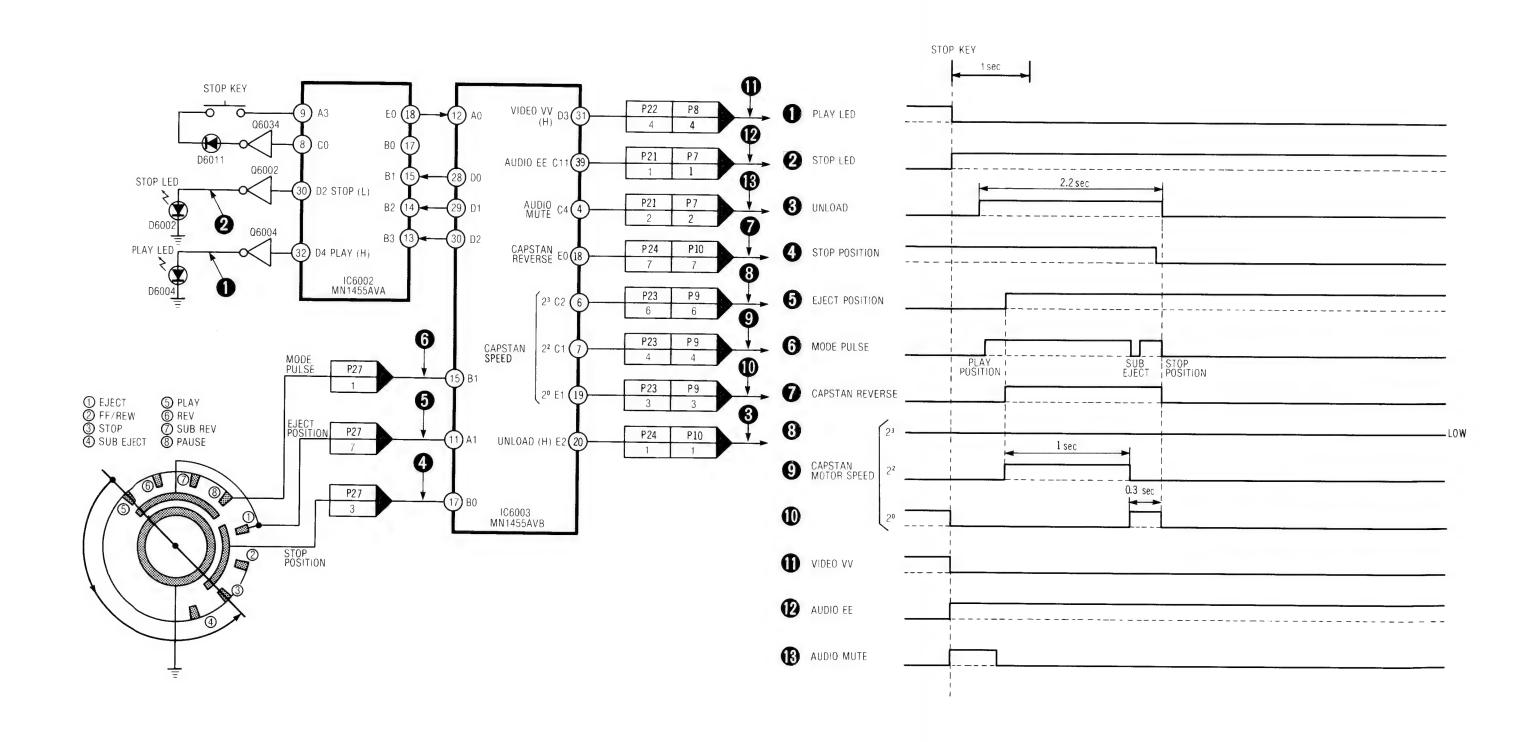
3—13

PIN	NAME	I/O	OPERATION
25	SNS0	INPUT	SERIAL CLOCK 2
26	SNS1	_	+5V
27	_	_	_
28	D0	OUTPUT	ECHO TO IC6002
29	D1	OUTPUT	ECHO TO IC6002
30	D2	OUTPUT	ECHO TO IC6002
31	D3	OUTPUT	EE (L)
32	D4	_	_
33	D5	_	_
34	D6	_	_
35	D7	OUTPUT	TAPE SENSOR LED
36	VDD	_	+5V
37	osc	INPUT	REF 900kHz
38	Vss	INPUT	GND
39	C11	ОИТРИТ	AUDIO EE
40	C10	ОИТРИТ	DELAYED REC
41	C9	OUTPUT	FULL ERASE
42	C8	OUTPUT	AUDIO REC

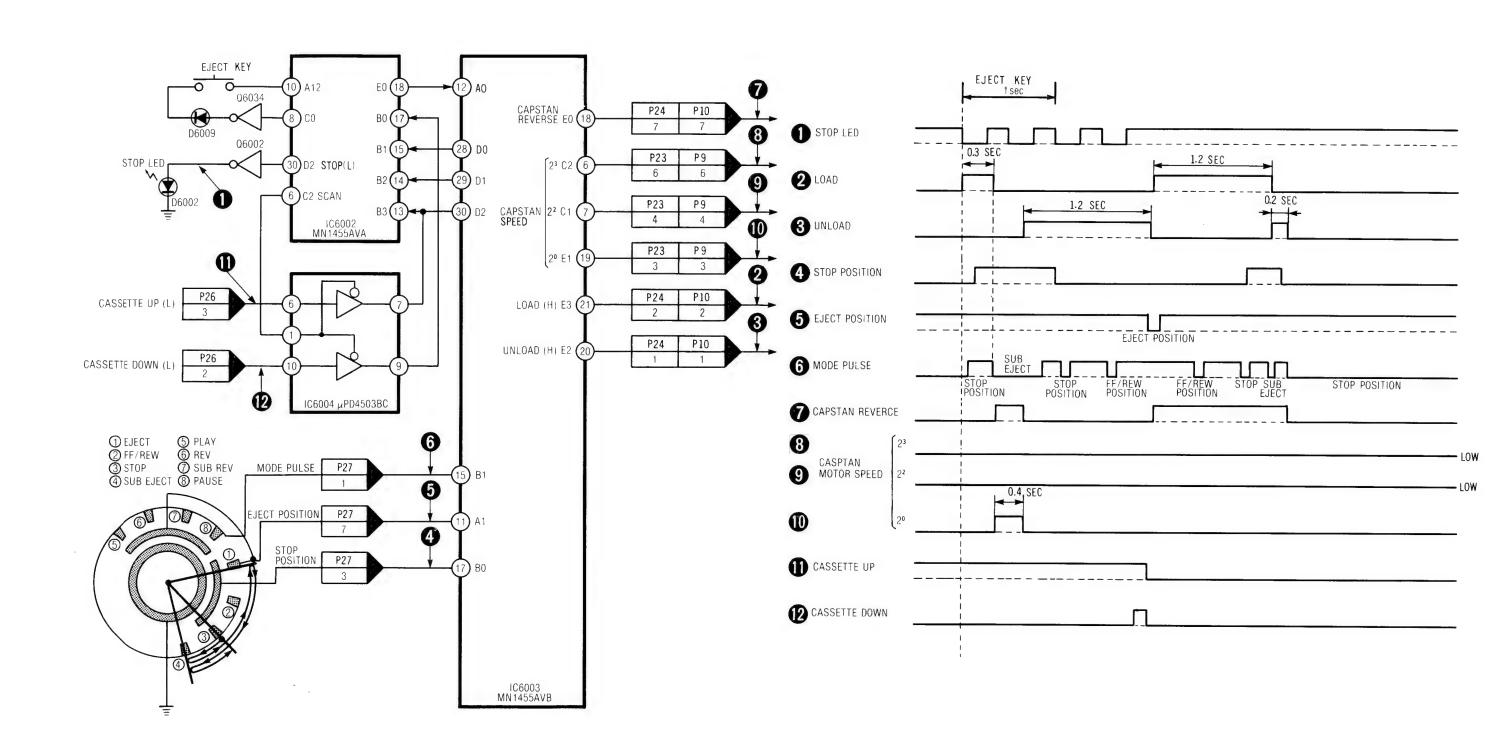
STOP → FF/REW BLOCK DIAGRAM (SYSTEM CONTROL)



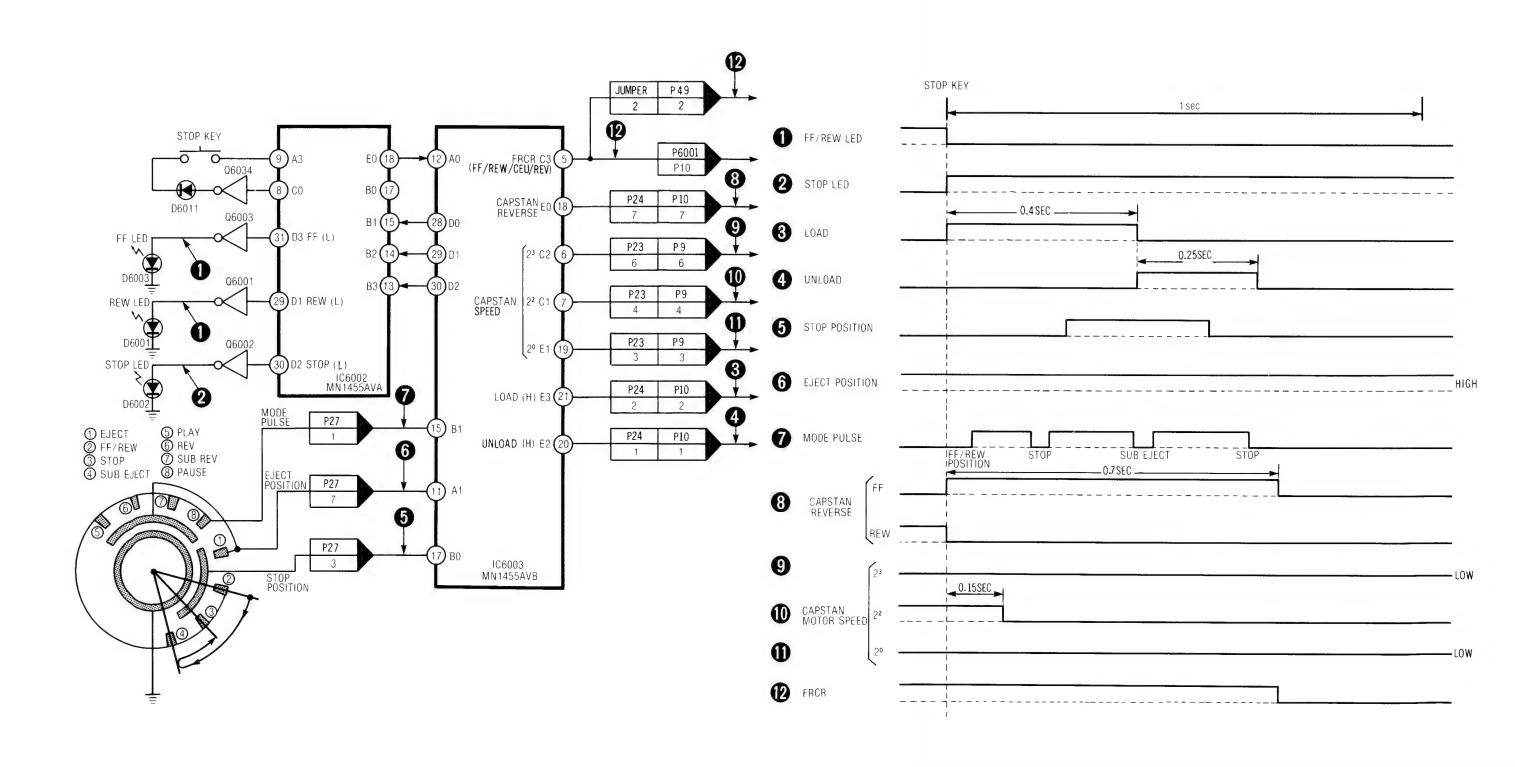
PLAY → STOP BLOCK DIAGRAM (SYSTEM CONTROL)



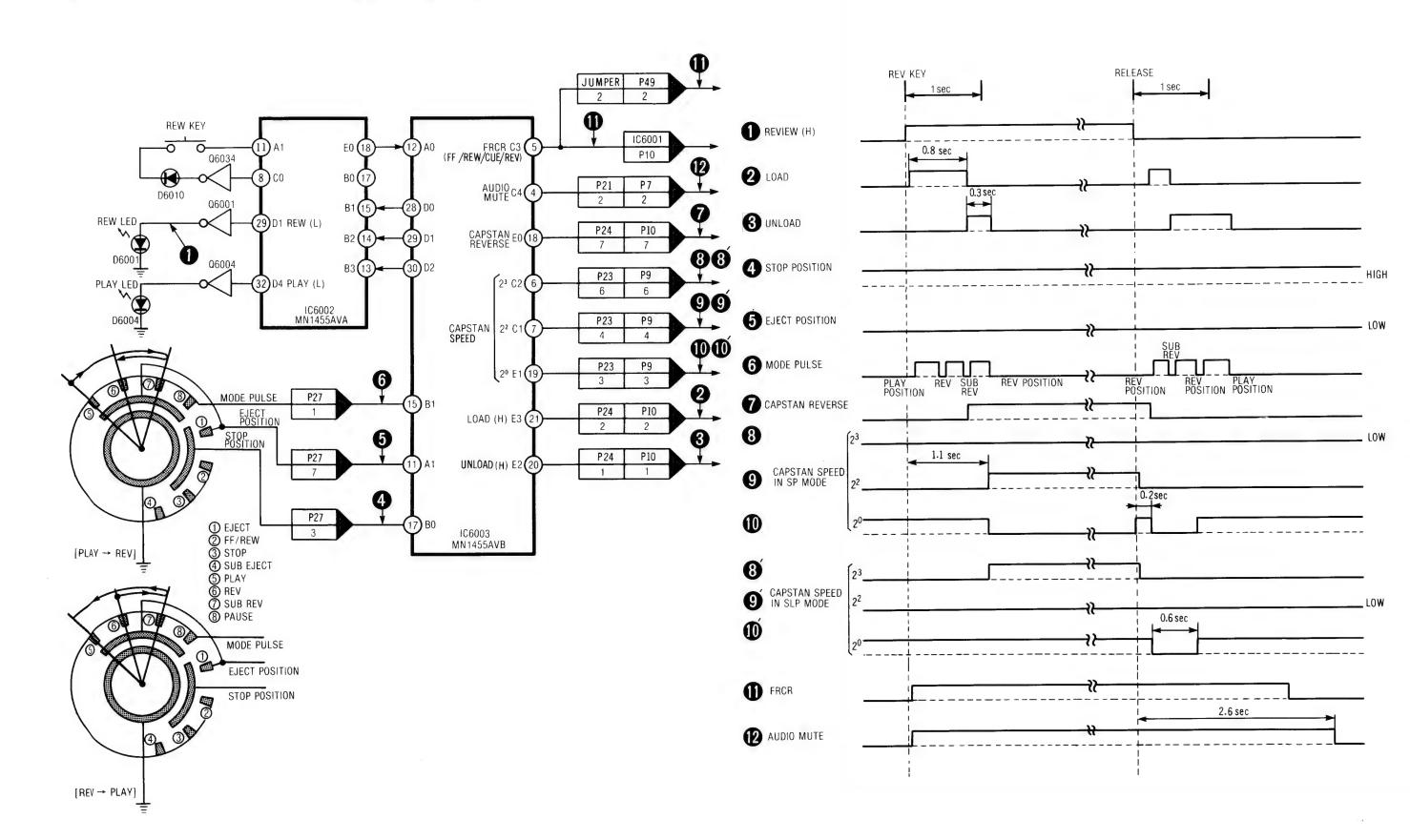
STOP → EJECT BLOCK DIAGRAM (SYSTEM CONTROL)



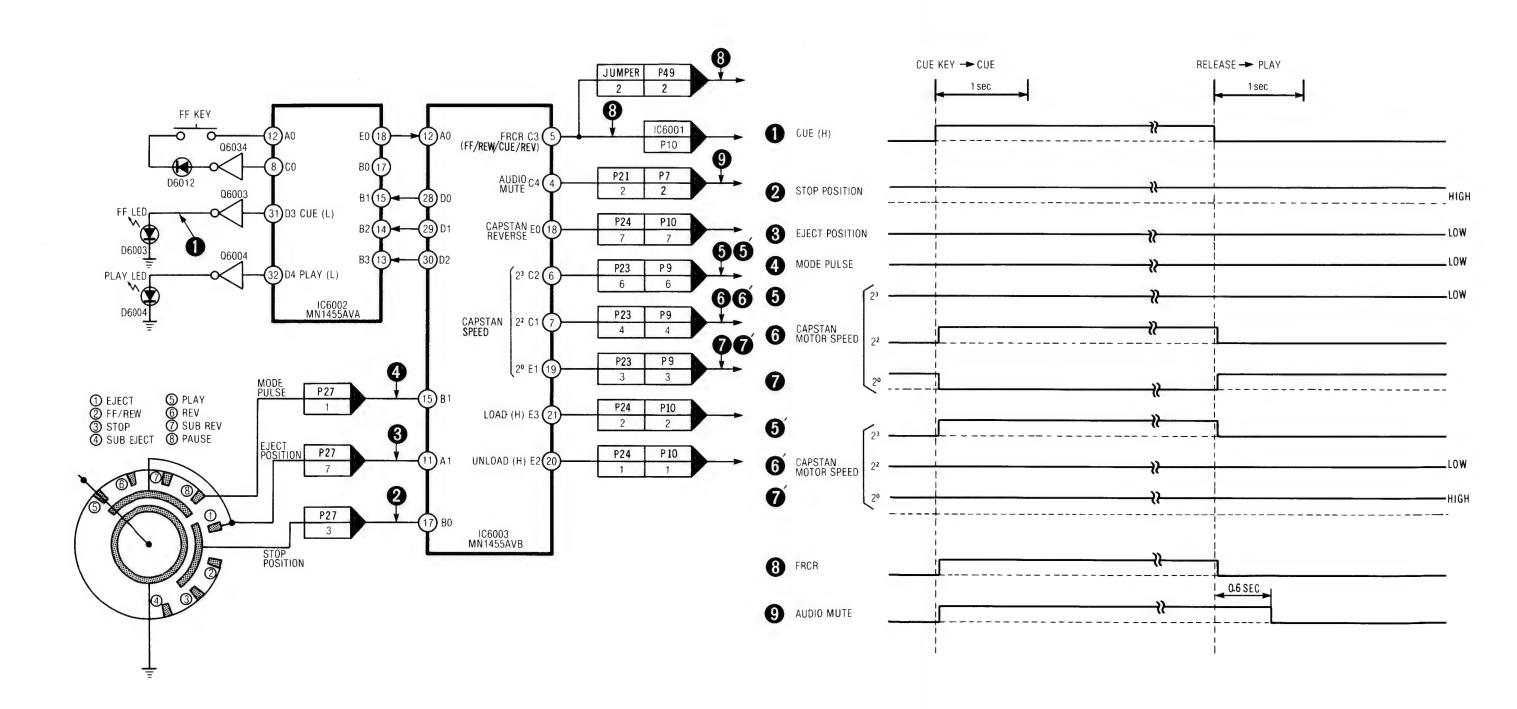
FF/REW → STOP BLOCK DIAGRAM (SYSTEM CONTROL)



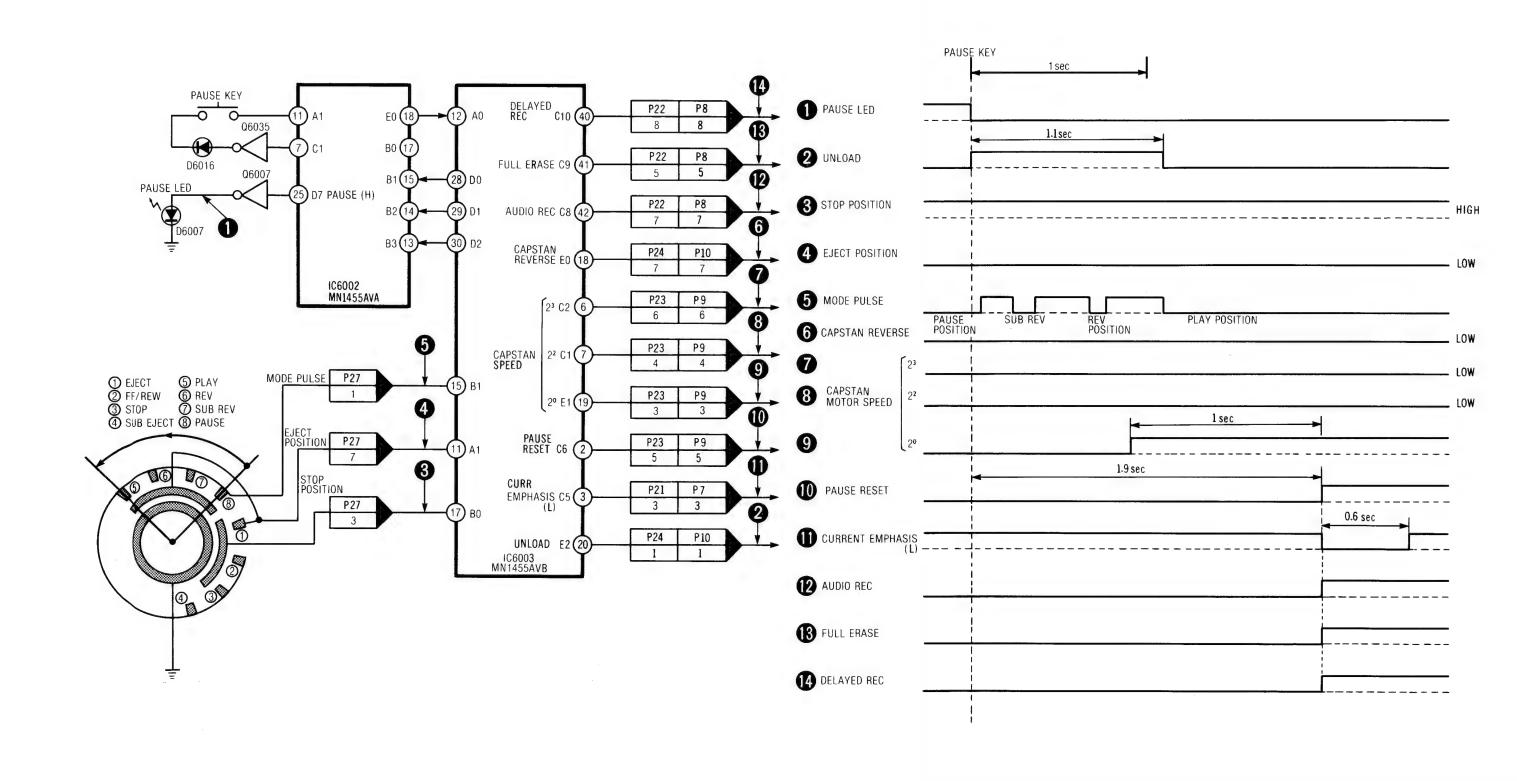
PLAY → REVIEW → PLAY BLOCK DIAGRAM (SYSTEM CONTROL)



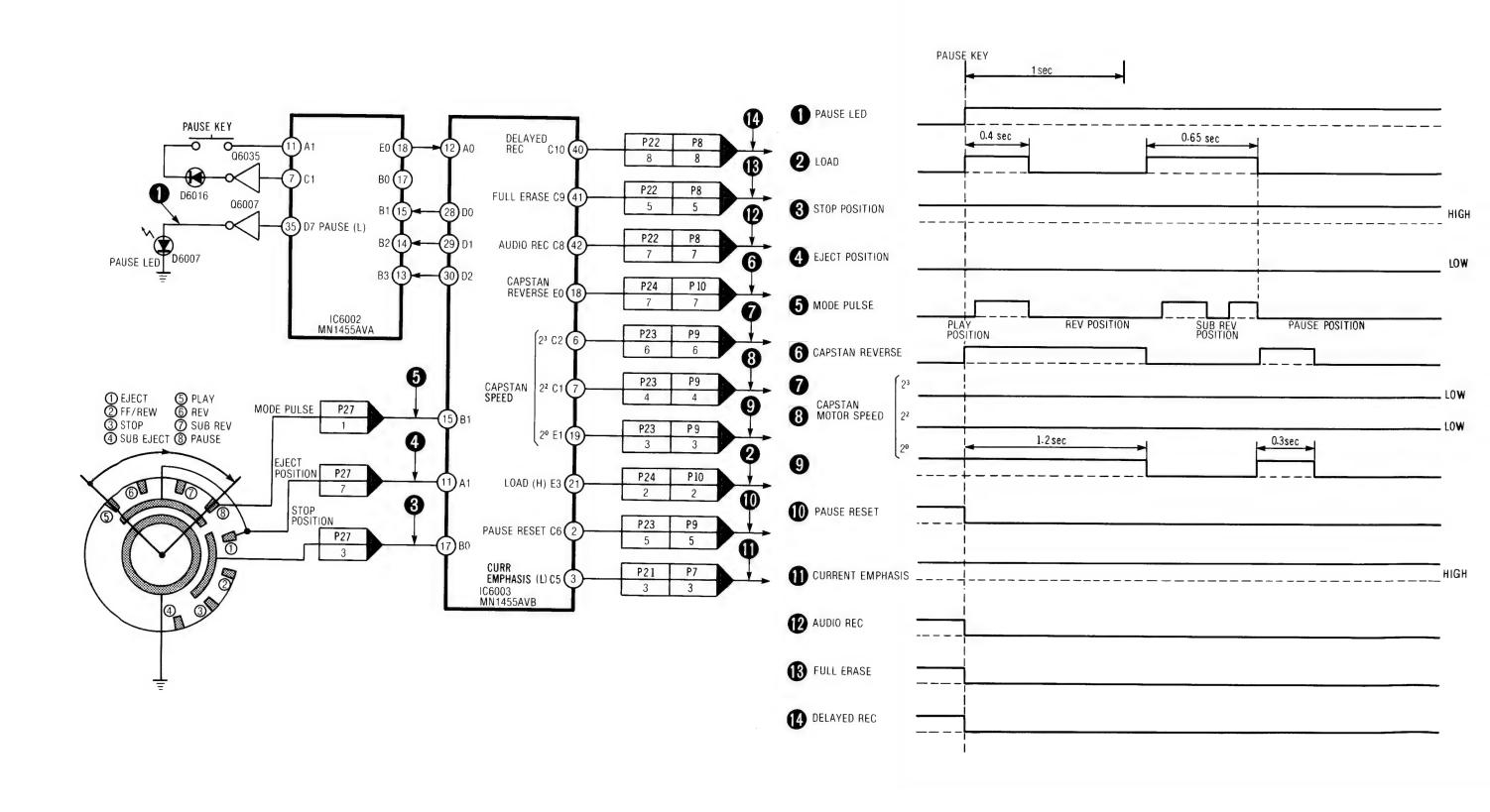
PLAY → CUE → PLAY BLOCK DIAGRAM (SYSTEM CONTROL)



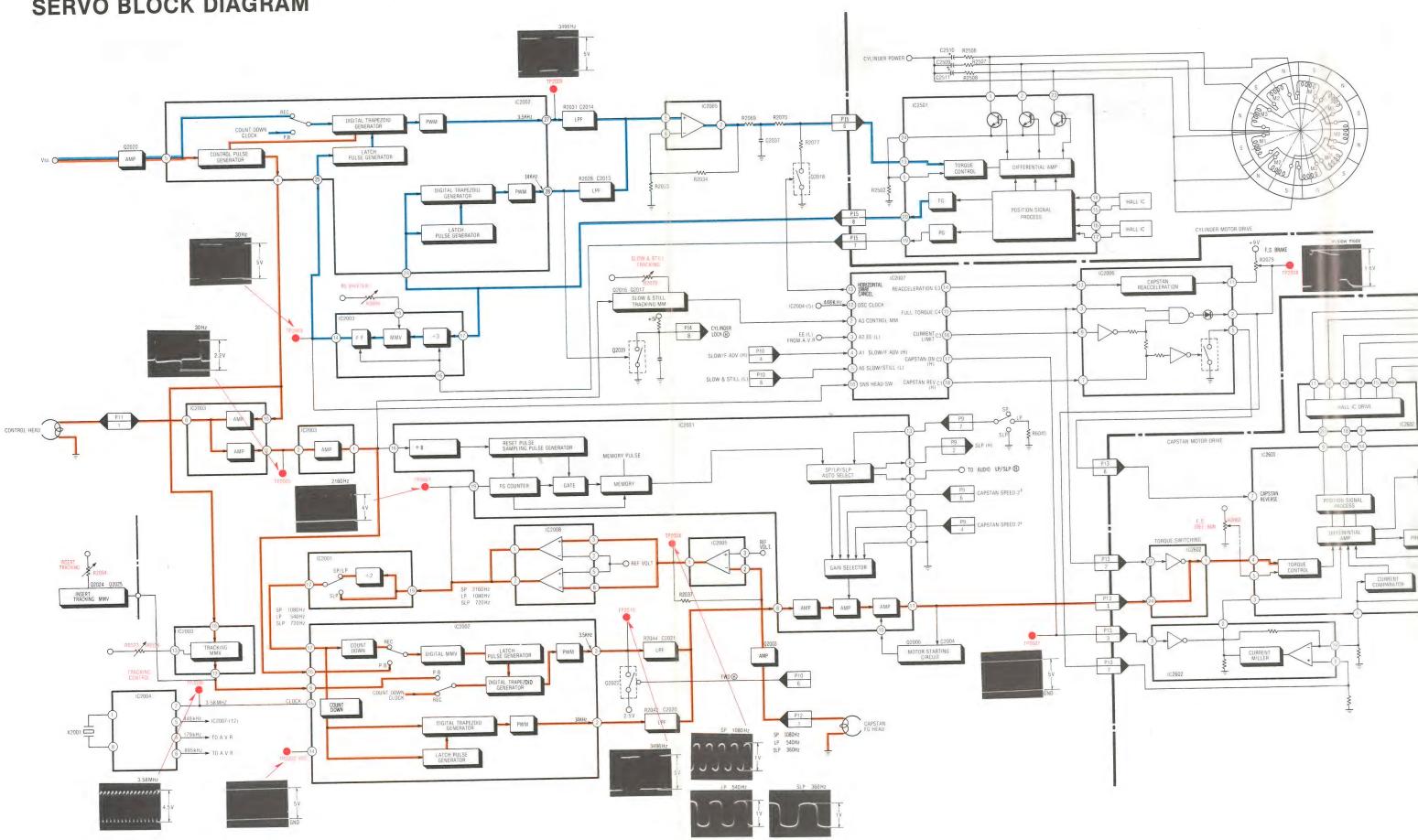
REC. PAUSE → **PAUSE RELEASE BLOCK DIAGRAM** (SYSTEM CONTROL)

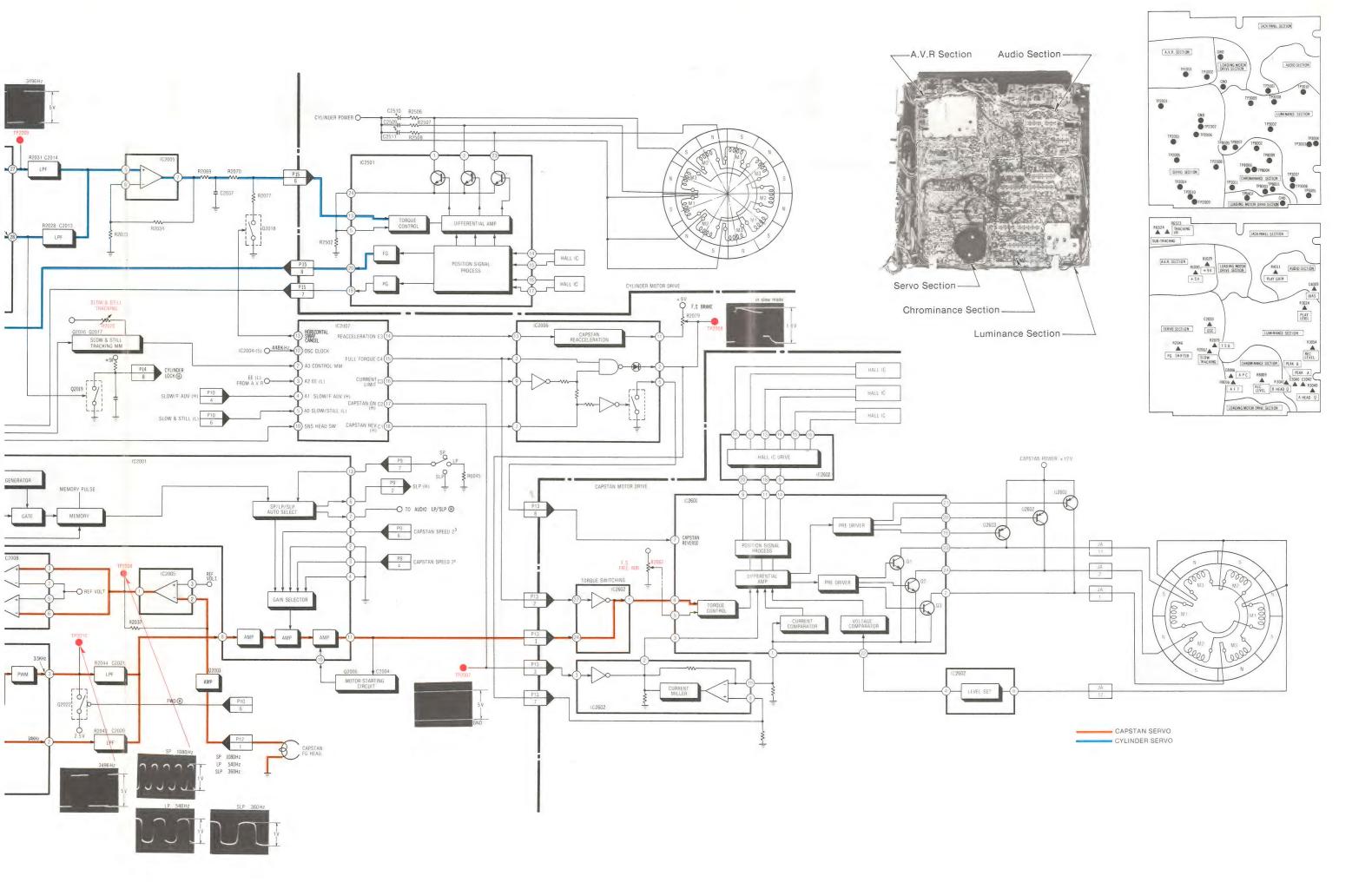


REC. PLAY → **PAUSE BLOCK DIAGRAM** (SYSTEM CONTROL)

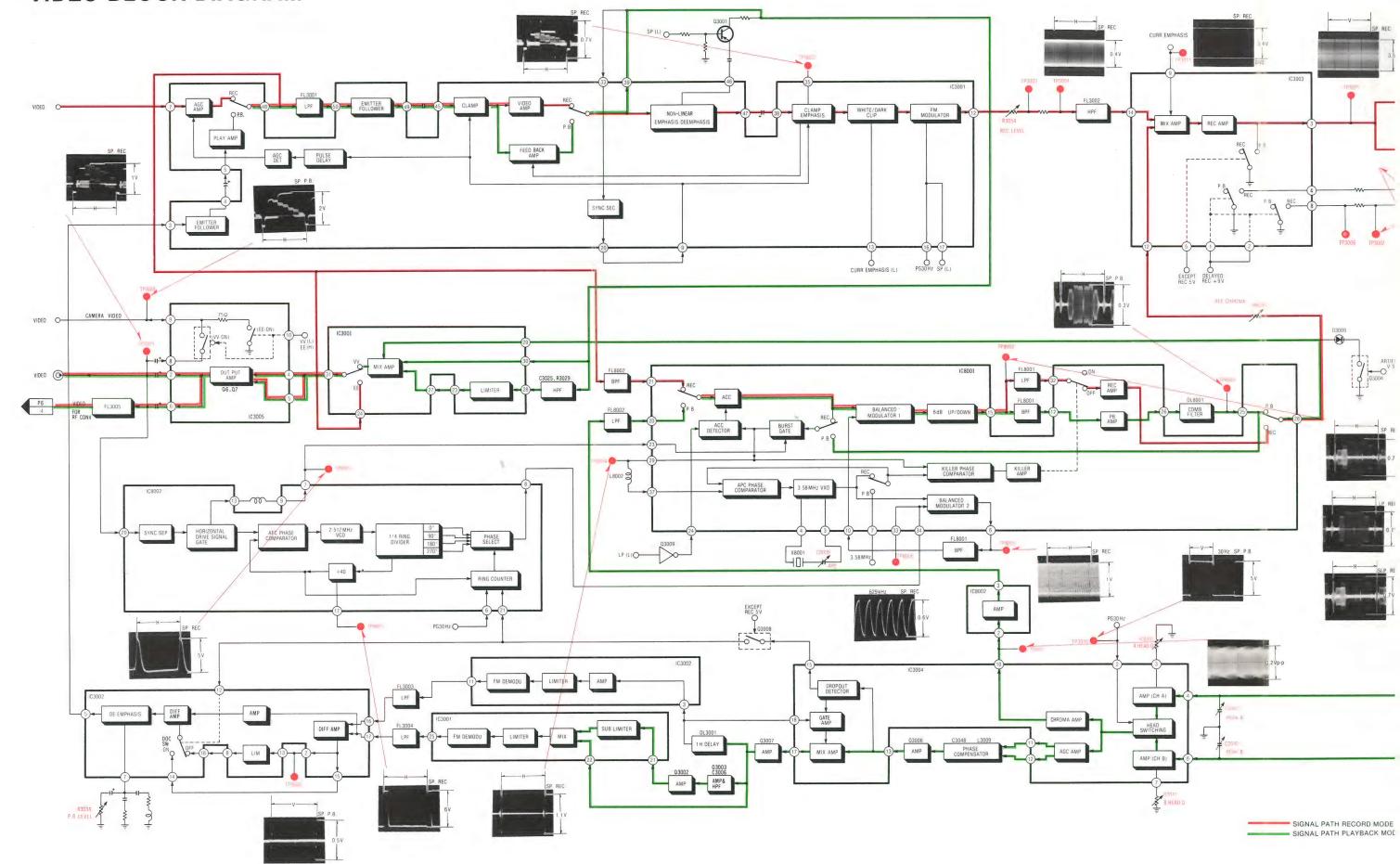


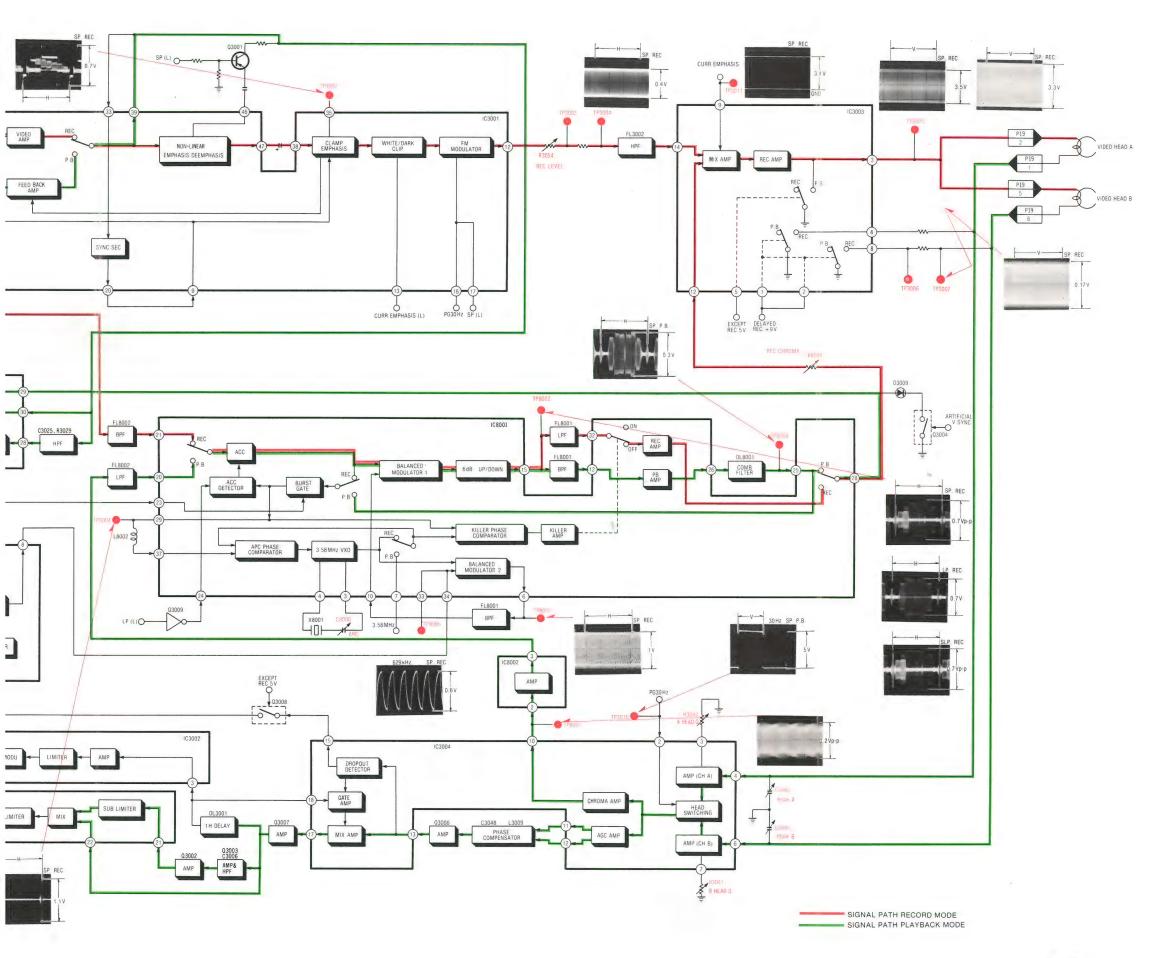
SERVO BLOCK DIAGRAM

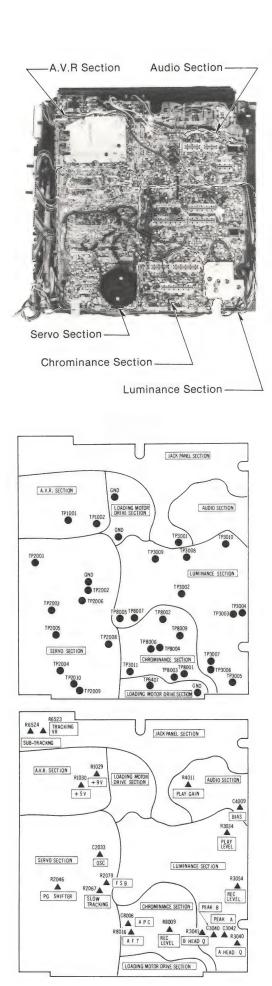




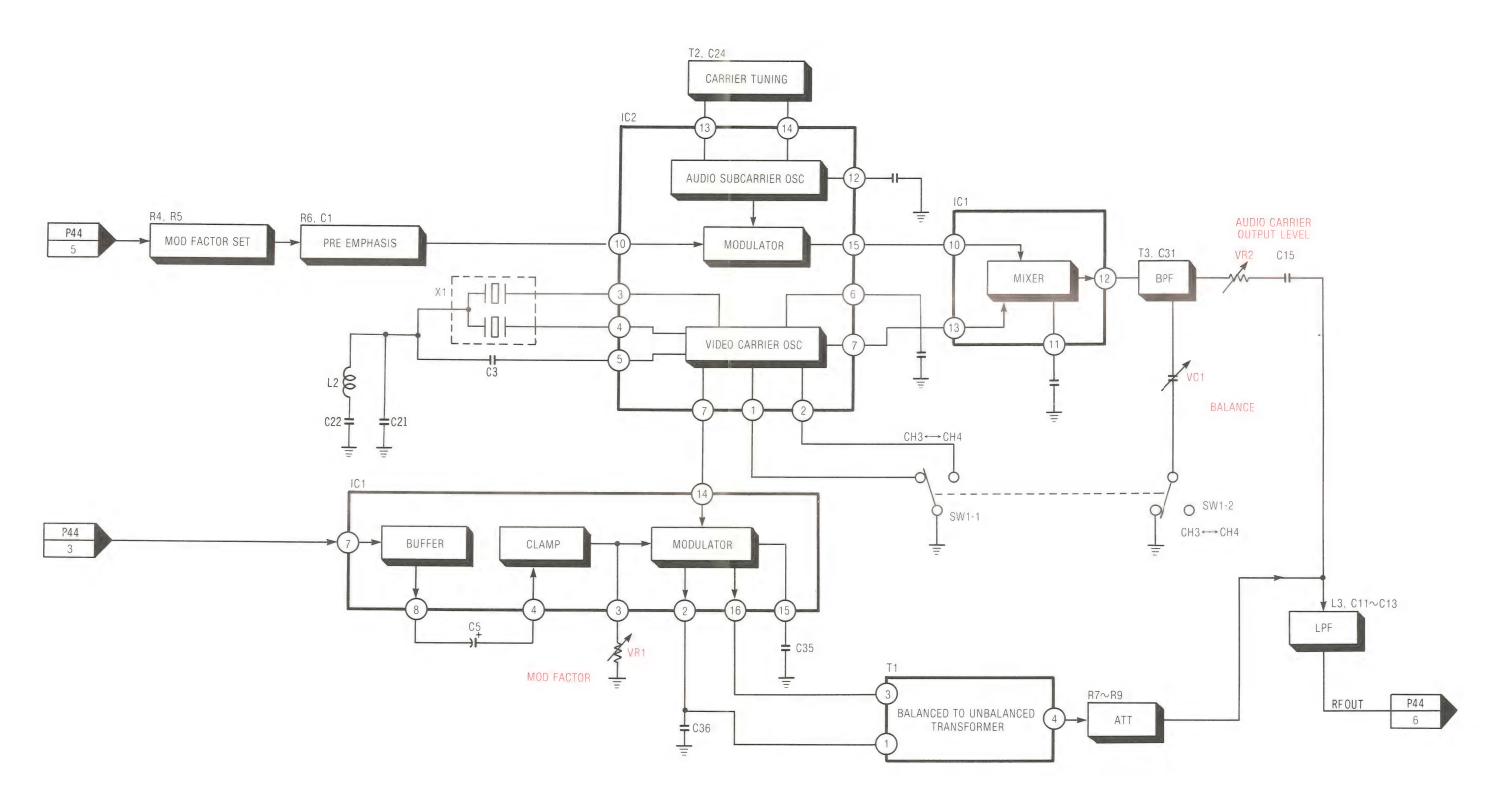
VIDEO BLOCK DIAGRAM



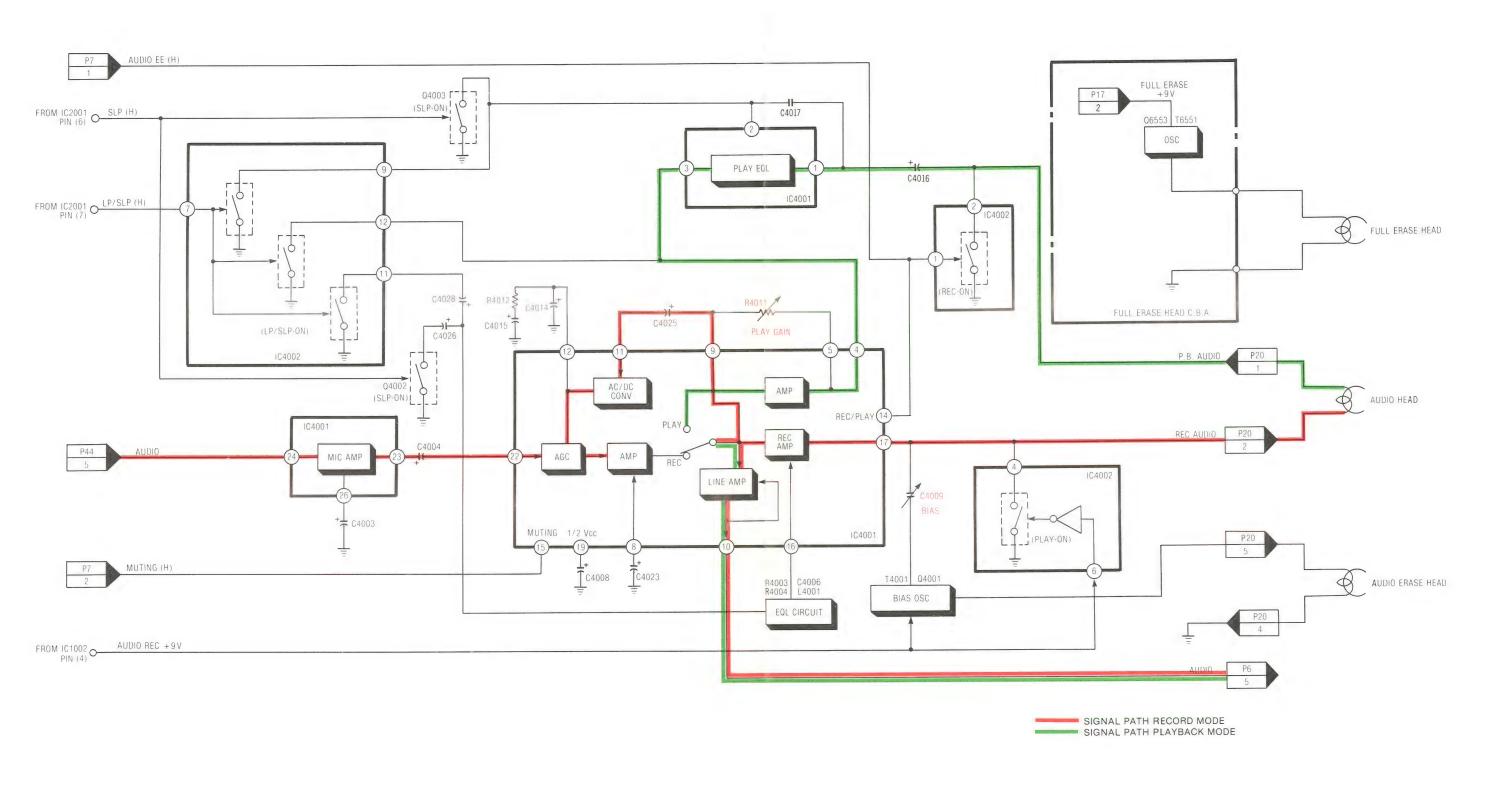




RF CONVERTER BLOCK DIAGRAM



AUDIO BLOCK DIAGRAM



Service Manua

Vol. 4

Schematic Diagrams **Printed Circuit Board Diagrams**

Panasonic VHS

Portable Video Cassette Recorder



SPECIFICATIONS

Power Source:

Battery LCS-2012P Elec. Tuner Unit PV-A200 Prog. Tuner Unit PV-A500 Multiple AC Adaptor PV-A100 Plug-in AC Adaptor PV-A110

Power Consumption: Approx. 7W at Play mode

Television System: EIA Standard (525 lines, 60 fields) NTSC color signal

Video Recording

System: 2 rotary heads helical scanning system

Luminance: FM azimuth recording Chrominance: Converted subcarrier phase shift recording

Audio Track:

Tape Format:

Tape width 1/2" (12.7 mm), high density

Tape Speed: SP mode: 1-5/16 i.p.s (33.35 mm/s)

LP mode: 21/32 i.p.s (16.67 mm/s) SLP mode: 7/16 i.p.s (11.12 mm/s)

Record/Playback Time: 360 min. with NV-T120 used in SLP

FF/REW Time:

Less than 6 min. with NV-T120

Heads:

Video: 2 Rotary heads

Audio/Control: 1 stationary head

Erase: 1 full track erase

1 audio track erase for audio

Input Level:

dubbing Video: VIDEO IN Jack (RCA type)

 $1.0\,\mathrm{Vp}$ -p, 75Ω unbalanced Audio: MIC IN Jack

 $-70 \, dB, \, 600 \Omega$ unbalanced

Output Level:

Video: VIDEO OUT Jack (RCA type)

 $1.0\,\mathrm{Vp}\text{-p}$, $75\,\Omega$ unbalanced

Audio: AUDIO OUT Jack (RCA type)

 $-6 \, \mathrm{dB}, \, 600 \, \Omega$ unbalanced

RF Modulated: Ch3/Ch4 switchable,

 $72 dB\mu$ (open voltage), 75Ω unbalanced

Video Horizontal

Resolution: More than 230 lines

Audio Frequency

Response: SP: 100 Hz ~ 8 kHz, (10 dB down) LP: 100 Hz ~ 6 kHz,

SLP: $150 \,\mathrm{Hz} \sim 5 \,\mathrm{kHz}$

Signal-to-Noise Ratio: Video: SP mode: better than 40dB LP mode: better than 40dB

SLP mode: better than 40dB (Rohde & Schwarz noise meter) Audio: SP mode: better than 42dB

LP mode: better than 40dB SLP mode: better than 40dB

Operating

Temperature: $32^{\circ}F \sim 104^{\circ}F (0^{\circ}C \sim 40^{\circ}C)$

Operating Humidity: $10\% \sim 75\%$

Weight: 8.4 lbs (3.8kg) (with internal battery pack) Dimensions:

 $9-3/8 \text{ "(W)} \times 3-5/8 \text{ "(H)} \times 9-9/16 \text{ "(D)}$ $238(W) \times 92.5(H) \times 242(D) mm$

Weight and dimensions shown are approximate. Specifications are subject to change without notice.

Panasonic Company Division of Matsushita Electric Corporation of America One Panasonic Way, Secaucus. New Jersey 07094

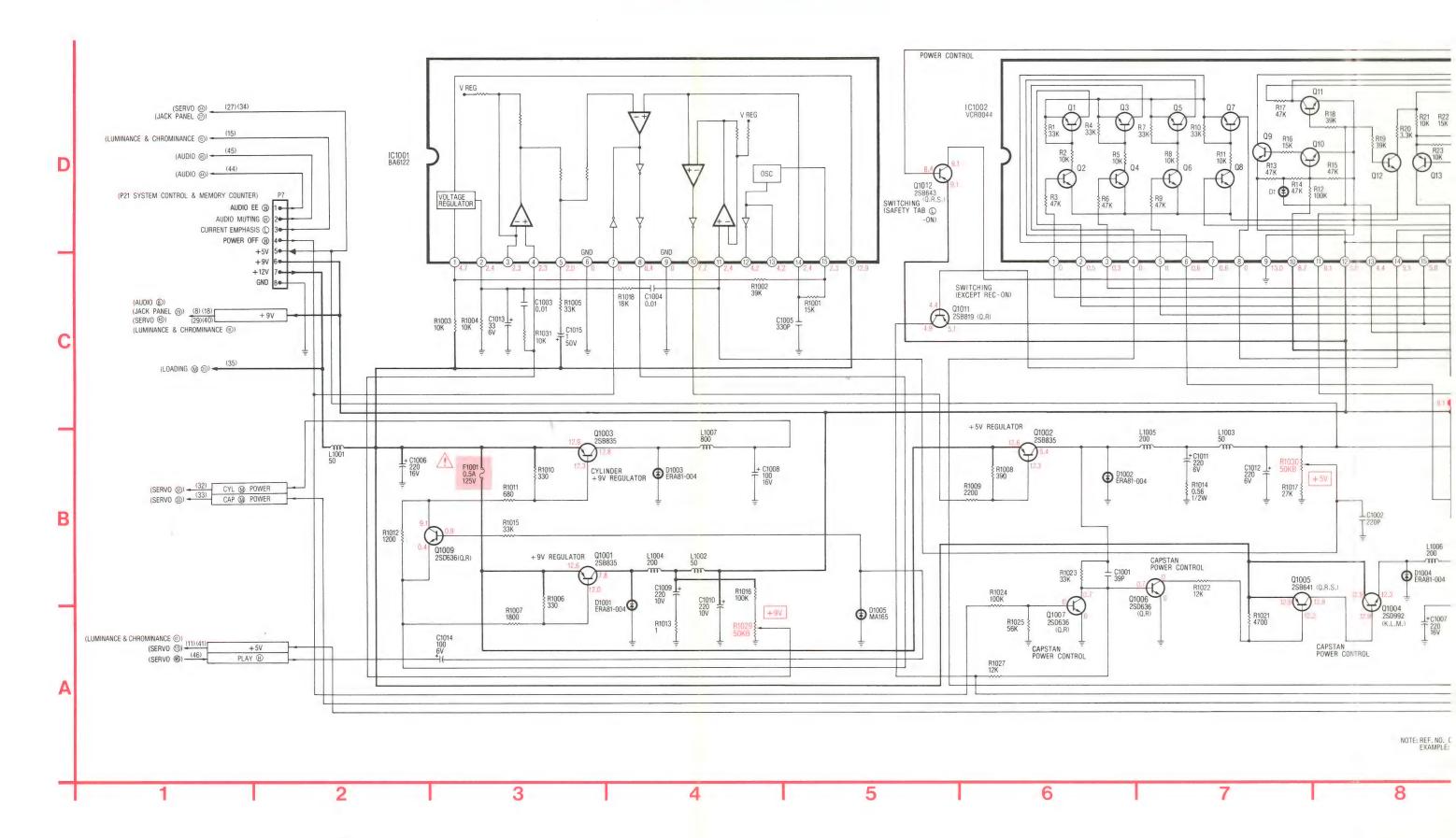
Panasonic Hawaii Inc 91-238 Kauhi St. Ewa Beach P.O. Box 774 Honolulu, Hawaii 96808-0774

Panasonic Canada Division of Matsushita Electric of Canada Limited 5770 Ambler Drive, Mississauga, Ontario, L4W 2T3

Panasonic Sales Company, Division of Matsushita Electric of Puerto Rico, Inc. Ave, 65 De Infanteria, KM 9.7 Victoria Industrial Park Carolina, Puerto Rico 00630

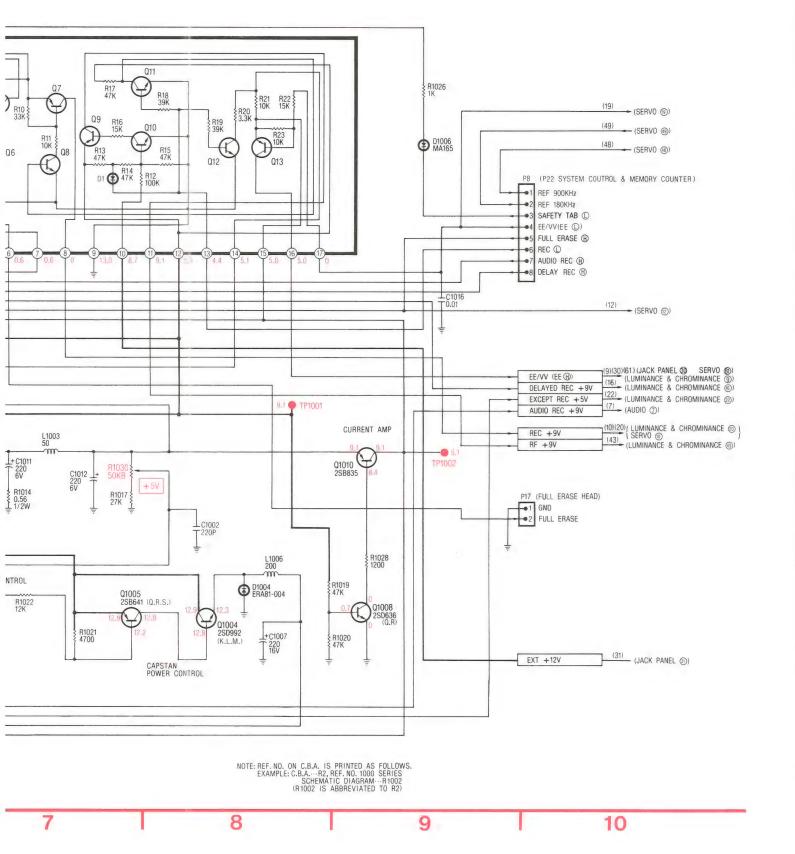
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NOTE -	
SAME COLOR CODE AS RESISTORS IS PRINTED ON CONNECTOR HOUSING OF FOUR OR LESS	
PINS TO INDICATE LAST NUMBER OF THE REFERENCE NUMBER.	
2P 3P 4P 4P	
COLOR CODE	



THE VOLTAGE MEASUREMENTS GIVEN IN THIS DRAWING ARE COLOR BAR SIGNAL IN STOP

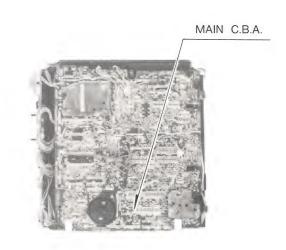
CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATIC DIAGRAM.



P7 (A.V.R. C.B.A.) PIN NO. SIGNAL NAME DESTINATION AUDIO EE (H) P21-1 SYSTEM CONTROL & MEMORY COUNTER C.B.A. AUDIO MUTING (H) P21-2 SYSTEM CONTROL & MEMORY COUNTER C.B.A. CURRENT EMPHASIS P21-3 SYSTEM CONTROL & MEMORY COUNTER C.B.A. POWER OFF (H) P21-4 SYSTEM CONTROL & MEMORY COUNTER C.B.A. +5V P21-5 SYSTEM CONTROL & MEMORY COUNTER C.B.A. +9VP21-6 SYSTEM CONTROL & MEMORY COUNTER C.B.A. +12VP21-7 SYSTEM CONTROL & MEMORY COUNTER C.B.A. GND P21-8 SYSTEM CONTROL & MEMORY COUNTER C.B.A.

P8 (A.V.R. C.B.A.)					
PIN NO.	SIGNAL NAME	DESTINATION			
1	REF 900KHz	P22-1 SYSTEM CONTROL & MEMORY COUNTER C.B.A.			
2	REF 180KHz	P22-2 SYSTEM CONTROL & MEMORY COUNTER C.B.A.			
3	SAFETY TAB (P22-3 SYSTEM CONTROL & MEMORY COUNTER C.B.A.			
4	EE/VV (EE (L))	P22-4 SYSTEM CONTROL & MEMORY COUNTER C.B.A.			
5	FULL ERASE (H)	P22-5 SYSTEM CONTROL & MEMORY COUNTER C.B.A.			
6	REC ①	P22-6 SYSTEM CONTROL & MEMORY COUNTER C.B.A.			
7	AUDIO REC (H)	P22-7 SYSTEM CONTROL & MEMORY COUNTER C.B.A.			
8	DELAY REC (H)	P22-8 SYSTEM CONTROL & MEMORY COUNTER C.B.A.			

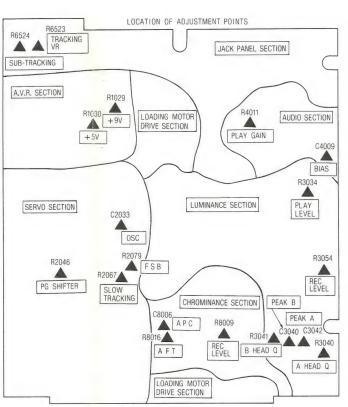
P17 (A.V.R. C.B.A.)				
PIN NO.	SIGNAL NAME	DESTINATION		
1	GND	P48-1 FULL ERASE HEAD C.B.A.		
2	FULL ERASE	P48-2 FULL ERASE HEAD C.B.A.		

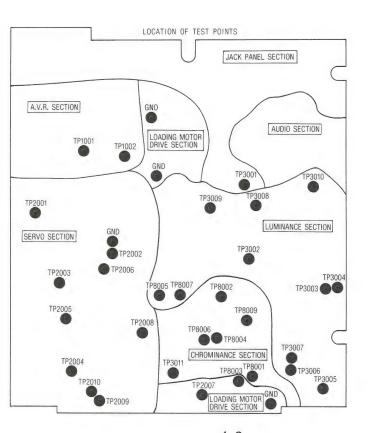


4-1

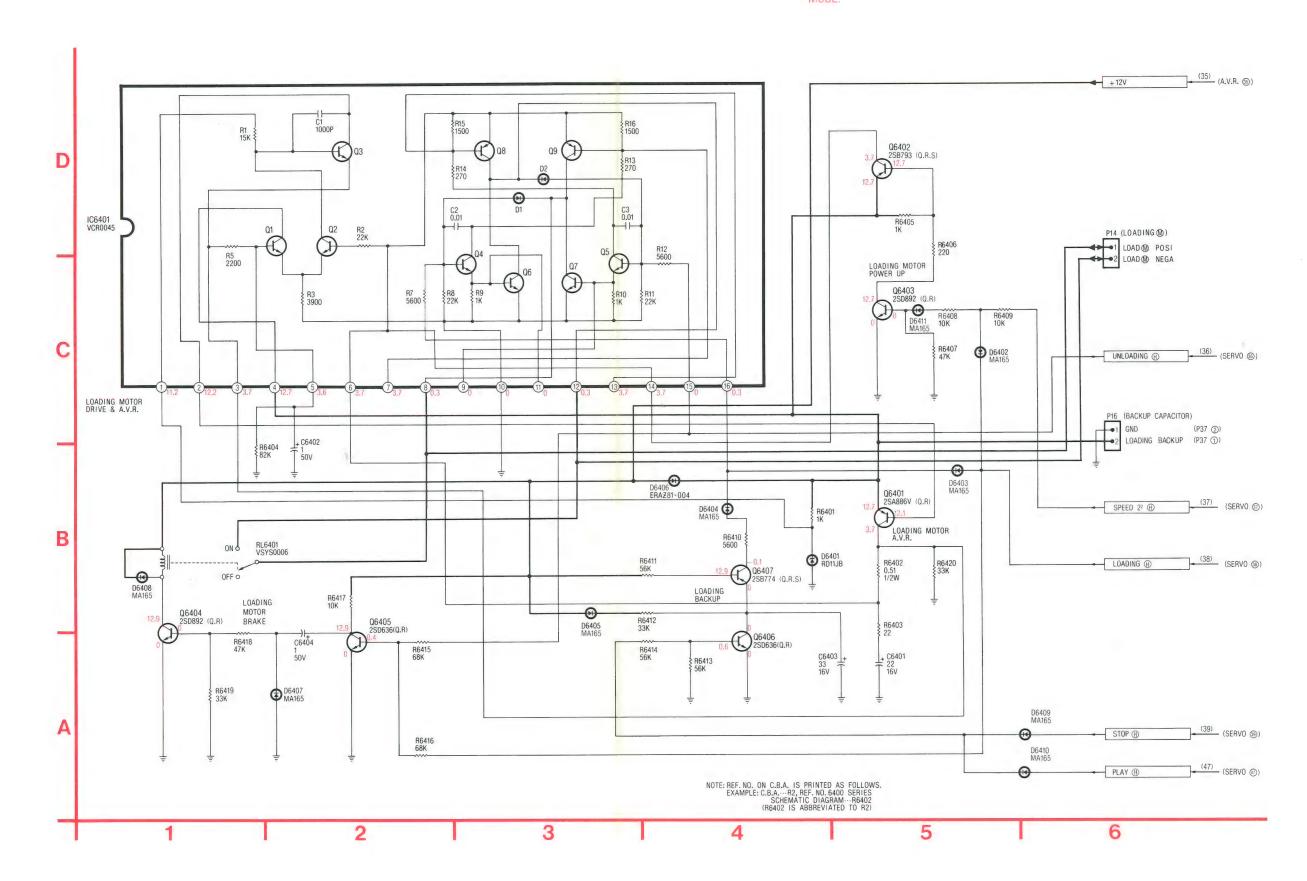
A.V.R.

SCHEMATIC DIAGRAM





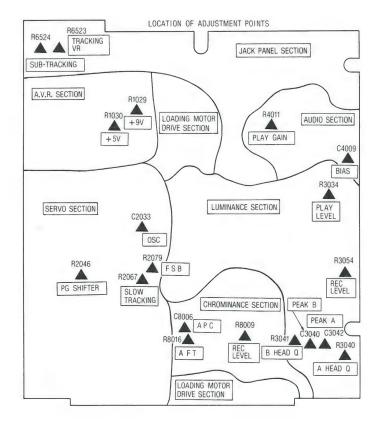
4-2 LOADING MOTOR SCHEMATIC DIAGRAM

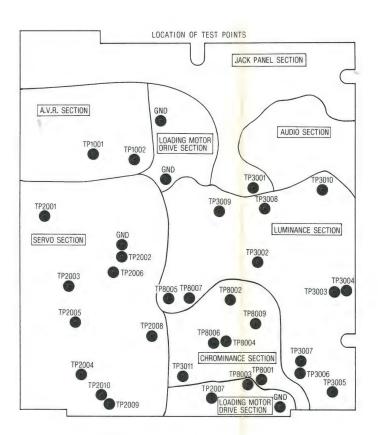


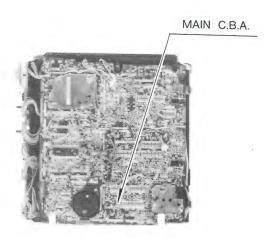
P14 (LOADING MOTOR DRIVE C.B.A.)				
PIN NO.	SIGNAL NAME	DESTINATION		
1	LOAD M POSI	M1552 LOADING MOTOR		
2	LOAD M NEGA	M1552 LOADING MOTOR		

P16 (LOADING MOTOR DRIVE C.B.A.)					
PIN NO.	SIGNAL NAME	DESTINATION			
1	GND	P37-2 SUB SYSTEM CONTROL C.B.A.			
2	LOAD BACKUP	P37-1 SUB SYSTEM CONTROL C.B.A.			

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATIC DIAGRAM.







	STOP			REC			PLAY		
	E	В	C	Е	В	C	Е	В	C
Q6401	12.8	12.2	3.7	12.7	12.1	3.7	12.6	12.2	3.7
Q6402	12.8	12.8	3.7	12.7	12.7	3.7	12.7	12.7	3.7
Q6403	0	0	12.8	0	0	12.7	0	0	12.8
Q6404	0	0	12.9	0	0	12.9	0	0	12.9
Q6405	0	0.4	12.9	0	0.4	12.9	0	0.4	12.9
Q6406	0	0.6	0	0	0.6	0	0	0.6	0
Q6407	0	12.9	-0.2	0	12.9	-0.1	0	12.8	-0.2

PIN NO.		IC 6401	
FIN NO.	STOP	REC	PLAY
PIN 1	11.2	11.2	11.2
PIN 2	12.2	12.2	12.1
PIN 3	3.7	3.7	3.7
PIN 4	12.7	12.7	12.7
PIN 5	3.6	3.6	3.6
PIN 6	3.7	3.7	3.7
PIN 7	3.7	3.7	3.7
PIN 8	0.4	0.3	0.4
PIN 9	0	0	0
PIN 10	0	0	0
PIN 11	0	0	0
PIN 12	0.4	0.3	0.4
PIN 13	3.7	3.7	3.7
PIN 14	3.7	3.7	3.7
PIN 15	0	0	0
PIN 16	0.3	0.3	0.3

VOLTAGE MEASUREMENTS: COLOR BAR SIGNAL IN SP MODE.

4-2

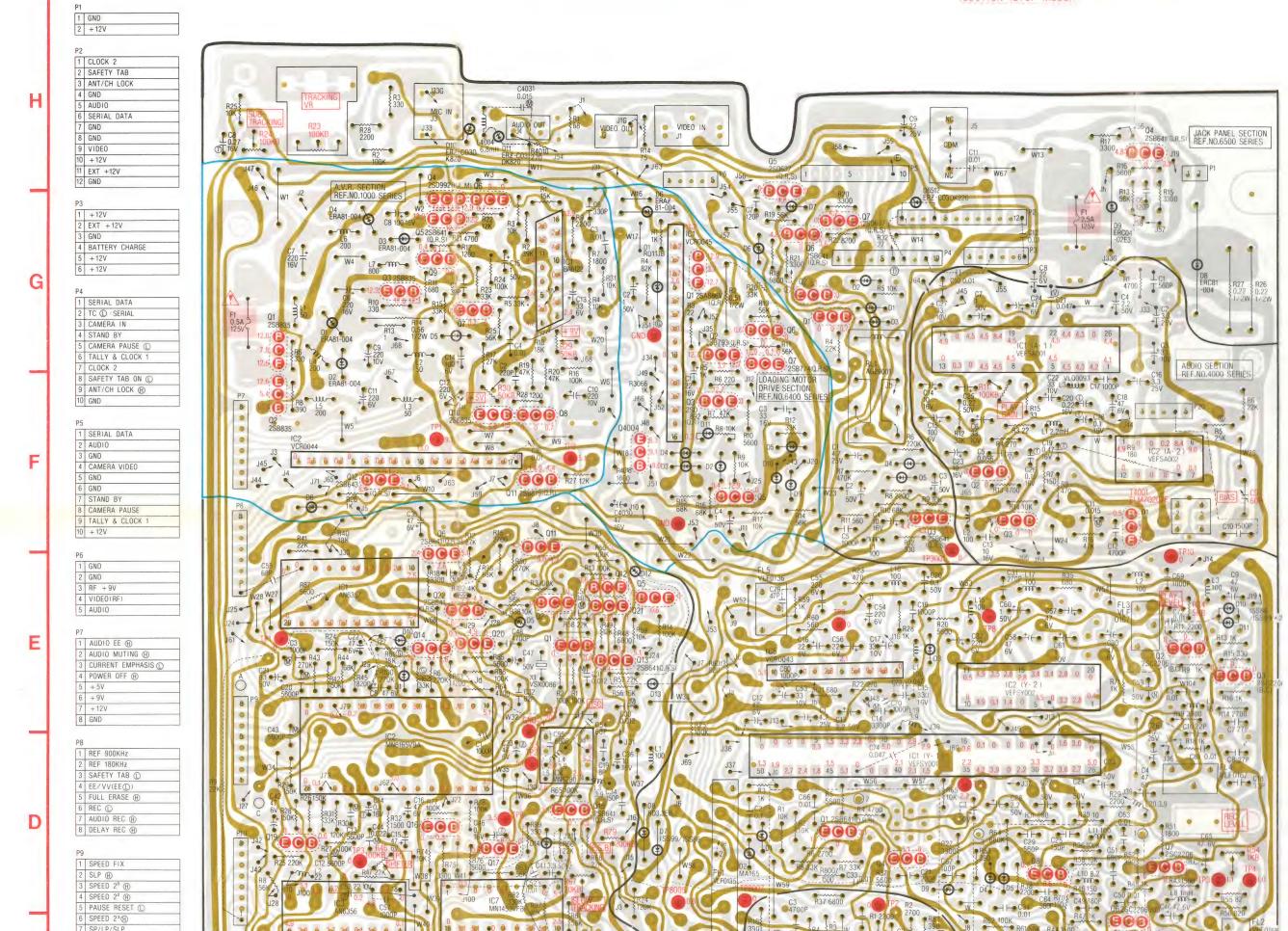
MAIN C.B.A. (VEPS0317A)

IMPORTANT SAFETY NOTICE:

COMPONENTS IDENTIFIED BY THE SIGN A HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

THE VOLTAGE MEASUREMENTS GIVEN IN THIS DRAWING ARE COLOR BAR SIGNAL IN SP-REC

EXCEPT A.V.R. SECTION AND JACK PANEL SECTION (STOP MODE).

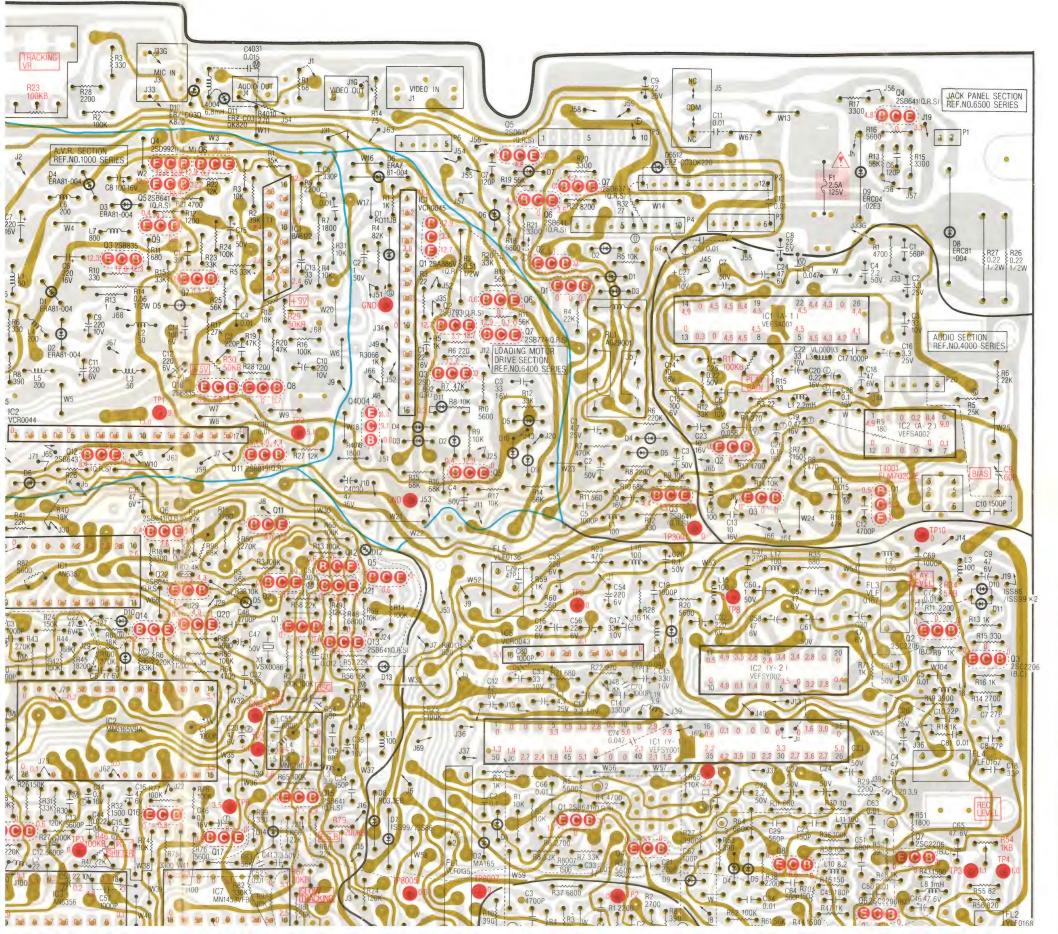


7A)

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ANY HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE
ONLY THE SPECIFIED PARTS.

THE VOLTAGE MEASUREMENTS GIVEN IN THIS DRAWING ARE COLOR BAR SIGNAL IN SP-REC

EXCEPT A.V.R. SECTION AND JACK PANEL SECTION (STOP MODE).



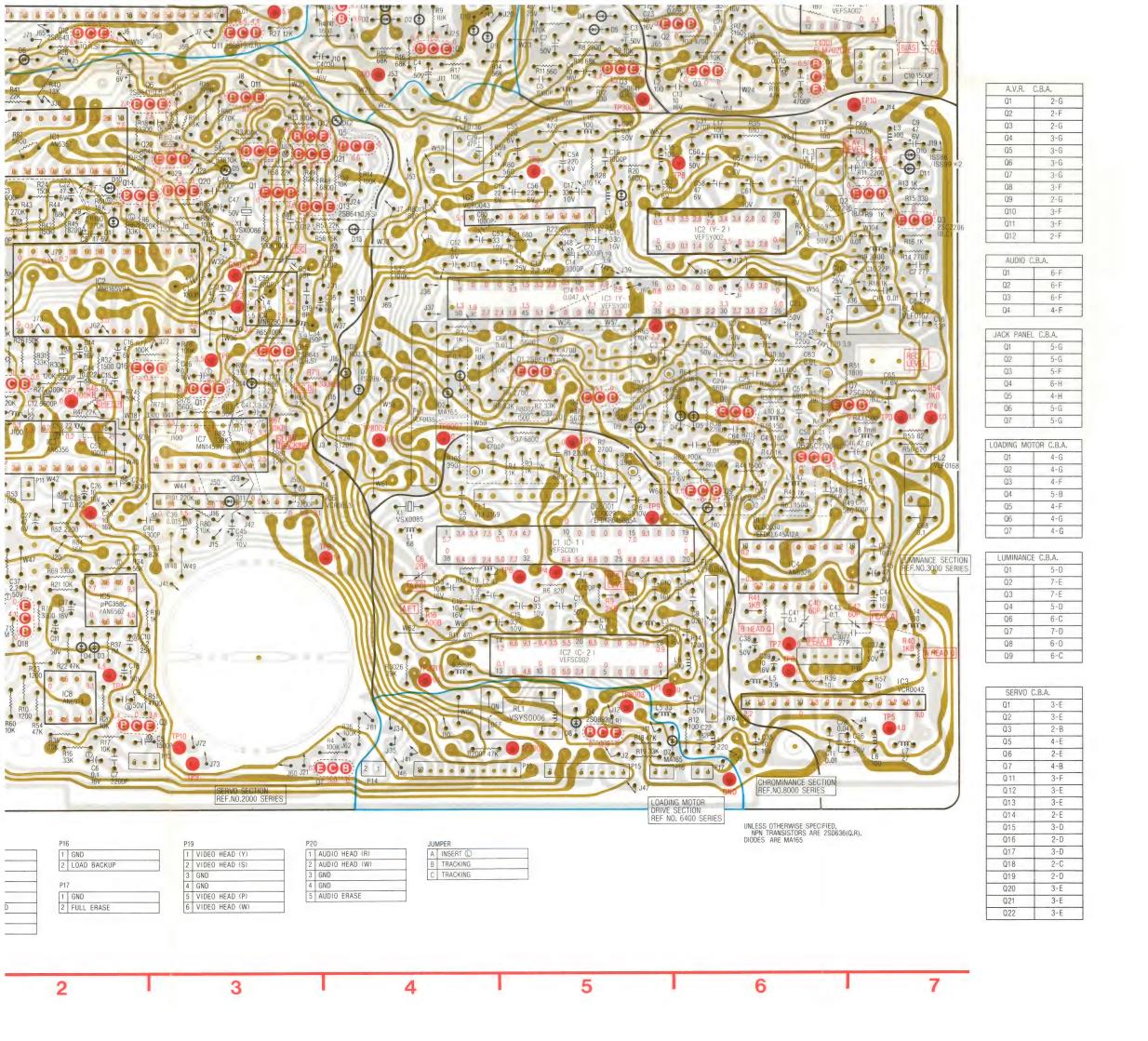
A.V.R.	A.V.R. C.B.A.				
Q1	2-G				
Q2	2-F				
Q3	2-G				
Q4	3-G				
Q5	3-G				
Q6	3-G				
Q7	3-G				
Q8	3-F				
Q9	2-G				
Q10	3-F				
Q11	3-F				
Q12	2-F				

AUDIO (C.B.A.
Q1	6-F
Q2	6-F
Q3	6-F
Q4	4-F

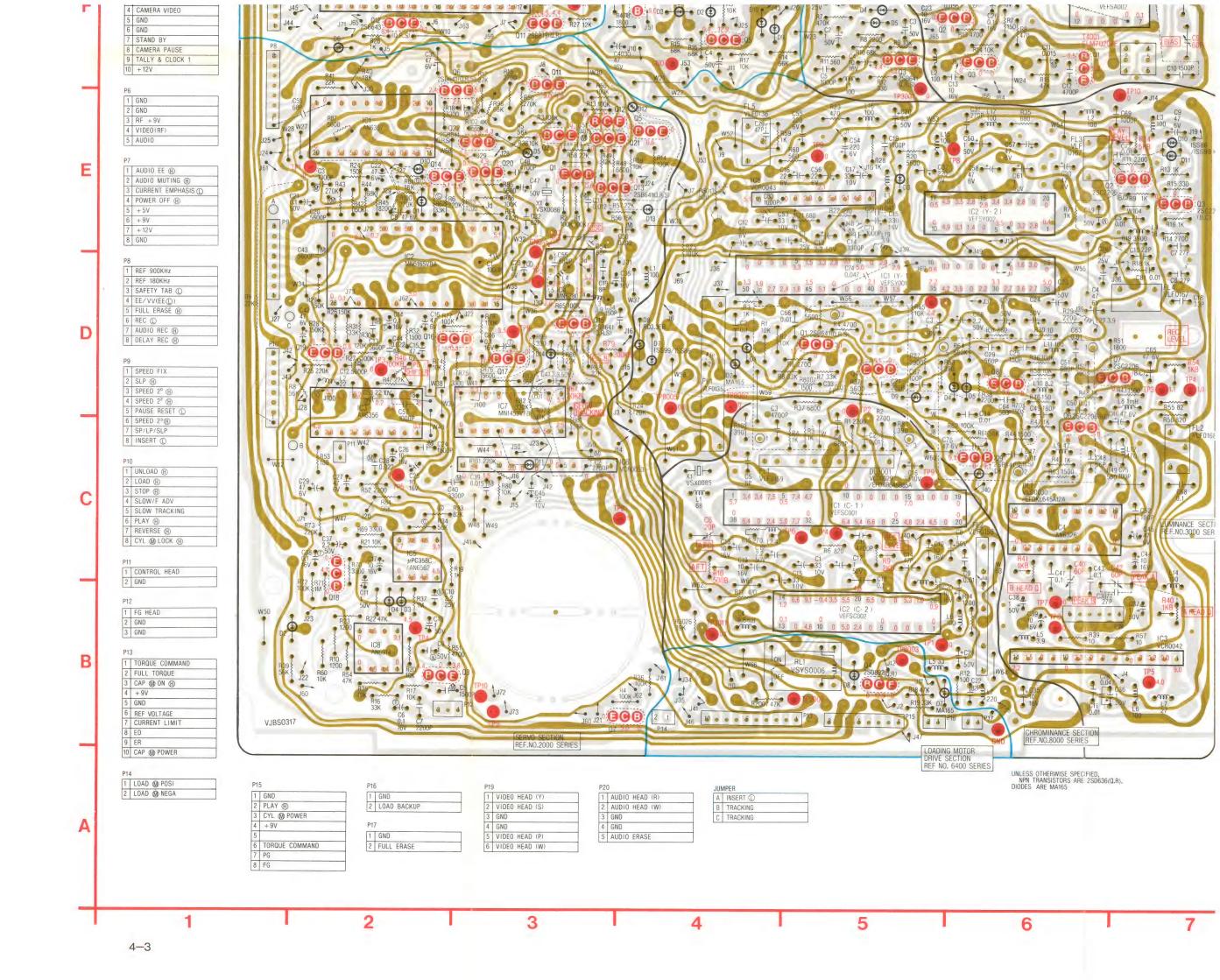
JACK PANE	L C.B.A.
Q1	5-G
Q2	5-G
Q3	5-F
Q4	6-H
Q5	4-H
Q6	5-G
Q7	5-G

LOADING	MOTOR C.B.A.
Q1	4-G
00	1.0

4-3 MAIN C.B.A. (A.V.R. & LOADING MOTOR SECTION)



4-4
MAIN C.B.A.
(JACK PANEL SECTION)



MAIN C.B.A. (VEPS0317A)

1 GND 2 +12V

1 CLOCK 2 2 SAFETY TAB 3 ANT/CH LOCK 4 GND 5 AUDIO 6 SERIAL DATA

7 GND

8 GND 9 VIDEO 10 +12V 11 EXT +12V

1 +12V 2 EXT +12V 3 GND 4 BATTERY CHARGE

6 +12V

1 SERIAL DATA
2 TC SERIAL
3 CAMERA IN
4 STAND BY
5 CAMERA PAUSE
6 TALLY & CLOCK 1
7 CLOCK 2
8 SAFETY TAB ON (
9 ANT/CH LOCK (H)

1 SERIAL DATA

CAMERA VIDEO

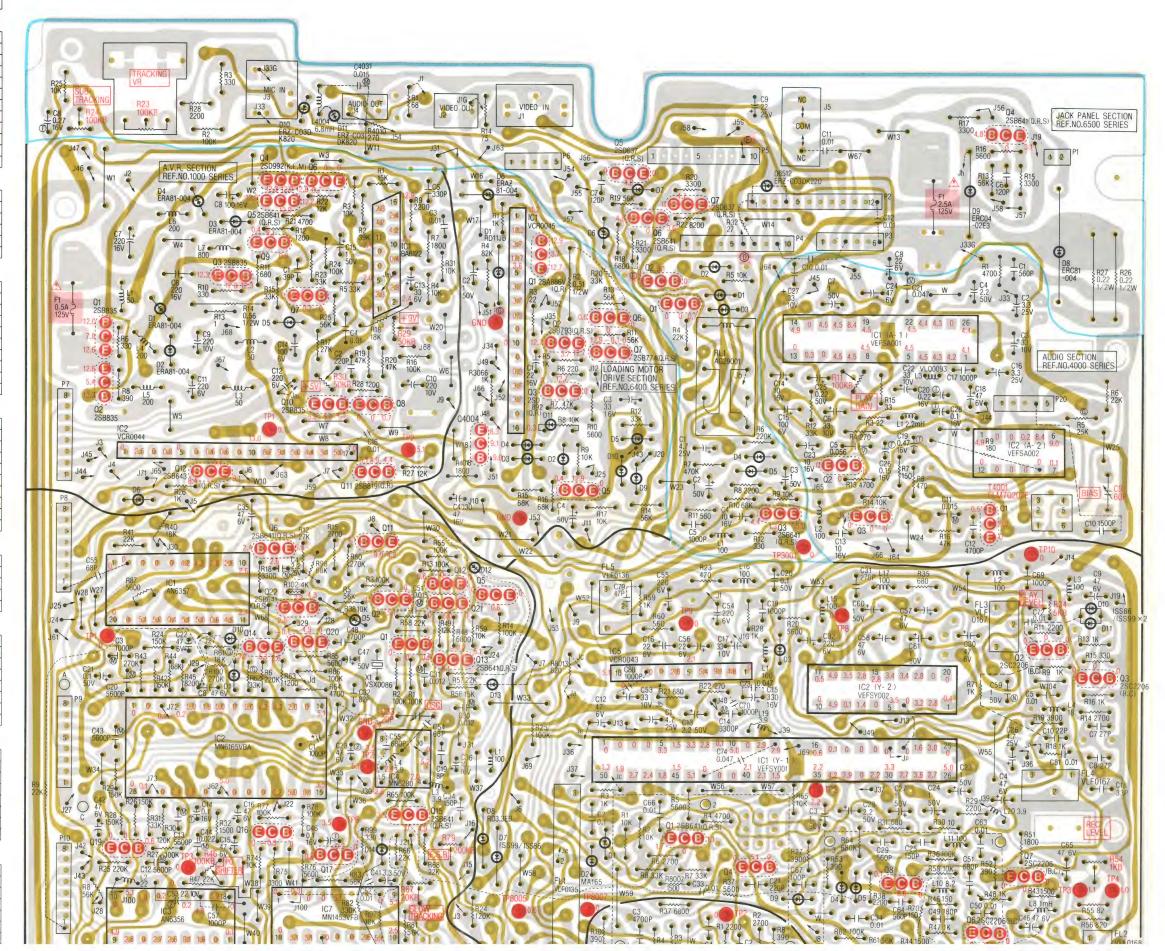
7 STAND BY 8 CAMERA PAUSE 9 TALLY & CLOCK 1

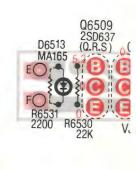
1 SPEED FIX
2 SLP (H)
3 SPEED 2° (H)
4 SPEED 2° (H)
5 PAUSE RESET
6 SPEED 2³ (H)

1 GND 2 GND 3 RF +9V 4 VIDEO(RF) 5 AUDIO IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ANY HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE
ONLY THE SPECIFIED PARTS.

THE VOLTAGE MEASUREMENTS GIVEN IN THIS DRAWING ARE COLOR BAR SIGNAL IN SP-REC MODE.

MODE.
EXCEPT A.V.R. SECTION AND JACK PANEL
SECTION (STOP MODE).





A.V.R. C.B.A.		
Q1	2-G	
Q2	2-F	
Q3	2-G	
Q4	3-G	
Q5	3-G	
Q6	3-G	
Q7	3-G	
08	3-F	
Q9	2-G	
Q10	3-F	
Q11	3-F	
Q12	2-F	

AUDIO	C.B.A.
Q1	6-F
Q2	6-F
Q3	6-F
Q4	4-F

JACK PANEL	C.B.A.
Q1	5-G
Q2	5-G
Q3	5-F
Q4	6-H
Q5	4-H
Q6	5-G
Q7	5-G

LOADING	MOTOR	C.B.A.
Q1		4-G

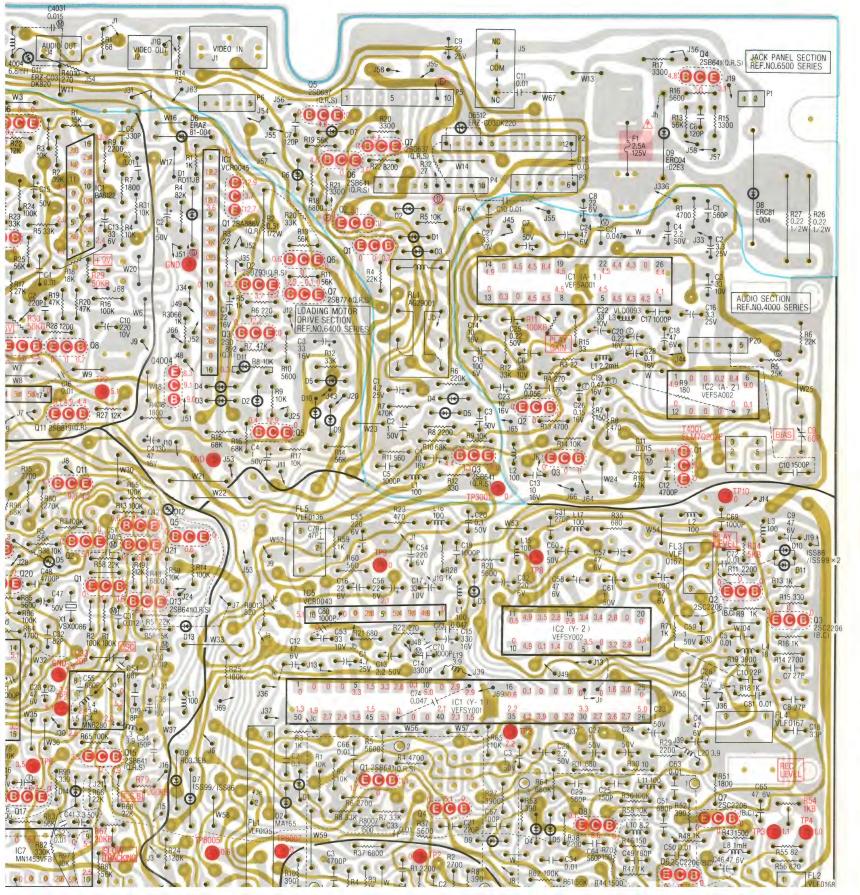
IMPORTANT SAFETY NOTICE: COMPONENTS IDENTIFIED BY THE SIGN A HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPORTED ANY OF THESE COMPONENTS, USE

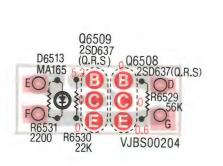
ONLY THE SPECIFIED PARTS.

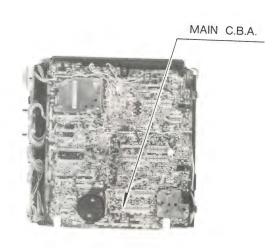
DRAWING ARE COLOR BAR SIGNAL IN SP-REC

EXCEPT A.V.R. SECTION AND JACK PANEL SECTION (STOP MODE).

THE VOLTAGE MEASUREMENTS GIVEN IN THIS





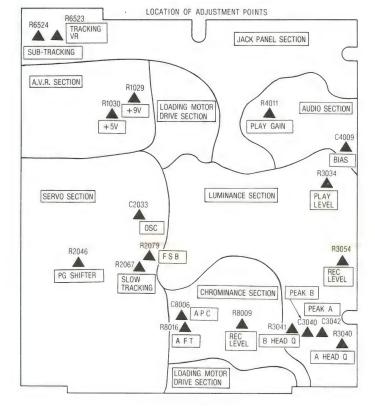


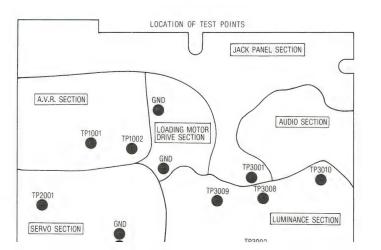
A.V.R.	C.B.A.
Q1	2-G
Q2	2-F
Q3	2-G
Q4	3-G
Q5	3-G
Q6	3-G
Q7	3-G
Q8	3-F
Q9	2-G
Q10	3-F
Q11	3-F
Q12	2-F

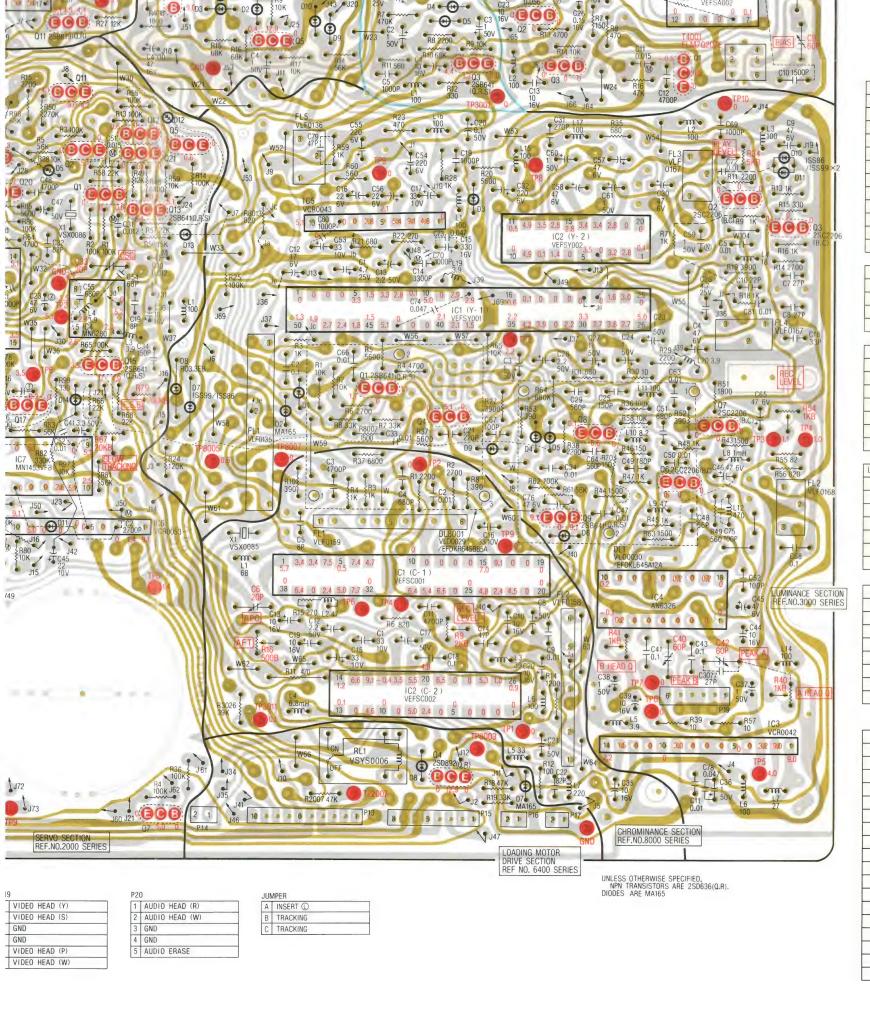
AUDIO	C.B.A.
Q1	6-F
Q2	6-F
Q3	6-F
Q4	4-F

JACK PANEL	C.B.A.
Q1	5-G
Q2	5-G
Q3	5-F
Q4	6-H
Q5	4-H
Q6	5-G
Q7	5-G

LOADING	MOTOR	C.B.A.	
Q1		4-G	







Q1	2-G
Q2	2-F
Q3	2-G
Q4	3-G
Q5	3-G
Q6	3-G
Q7	3-G
Q8	3-F
Q9	2-G
Q10	3-F
Q11	3-F
012	2-F

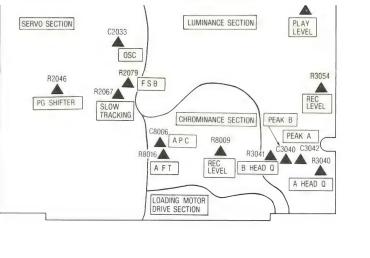
AUDIO C	C.B.A.
Q1	6-F
Q2	6-F
Q3	6-F
Q4	4-F

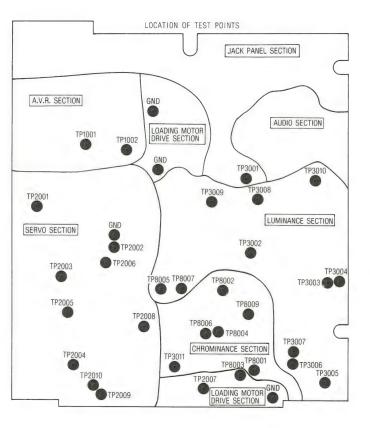
JACK PANEL	C.B.A.
Q1	5-G
Q2	5-G
Q3	5-F
Q4	6-H
Q5	4-H
Q6	5-G
Q7	5-G

LOADING MO	TOR C.B.A.
Q1	4-G
Q2	4-G
Q3	4-F
Q4	5-B
Q5	4-F
Q6	4-G
Q7	4-G

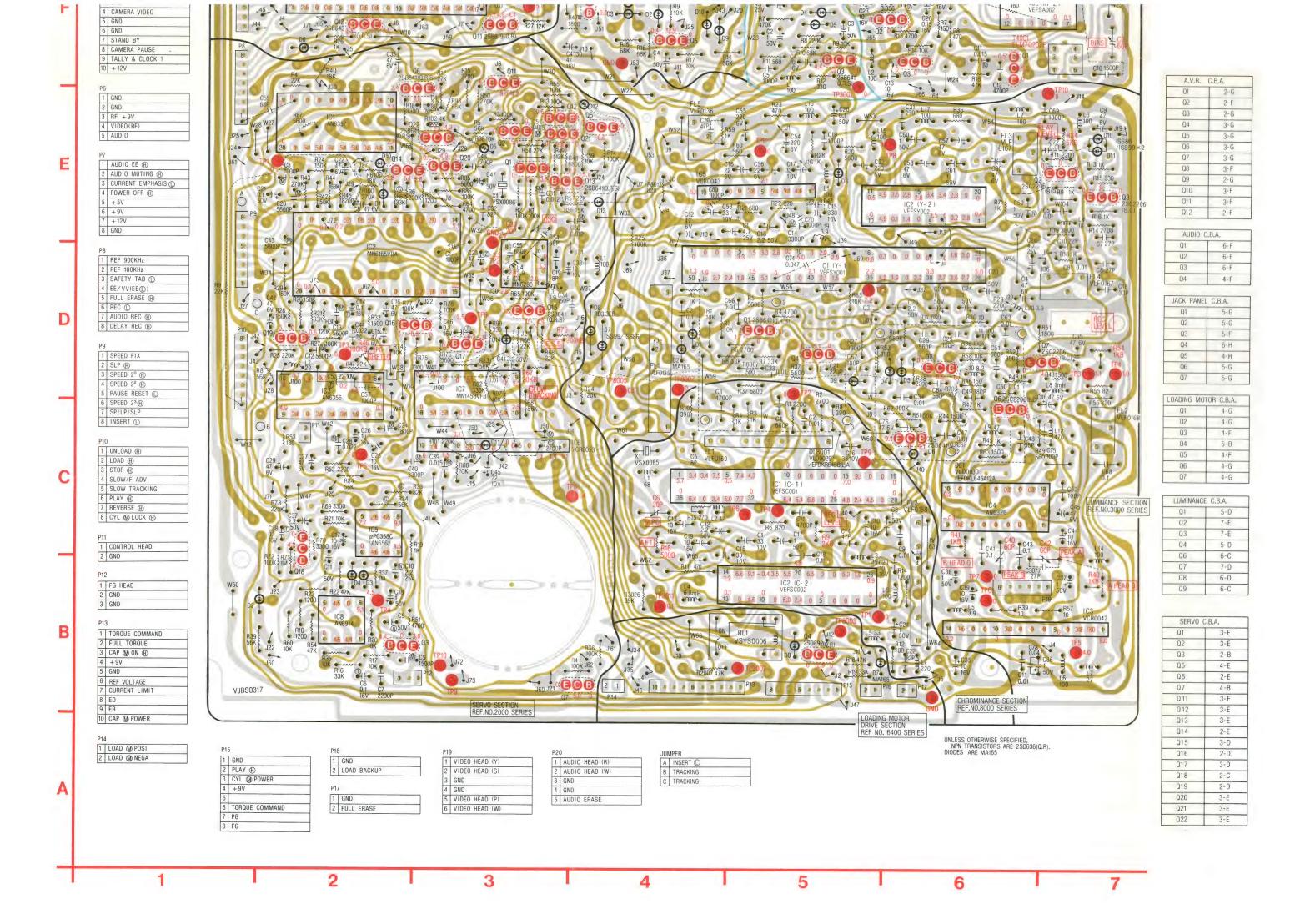
LUMINANCE C.B.A.	
Q1	5-D
Q2	7-E
Q3	7-E
Q4	5-D
06	6-C
Q7	7-D
Q8	6-D
Q9	6-C

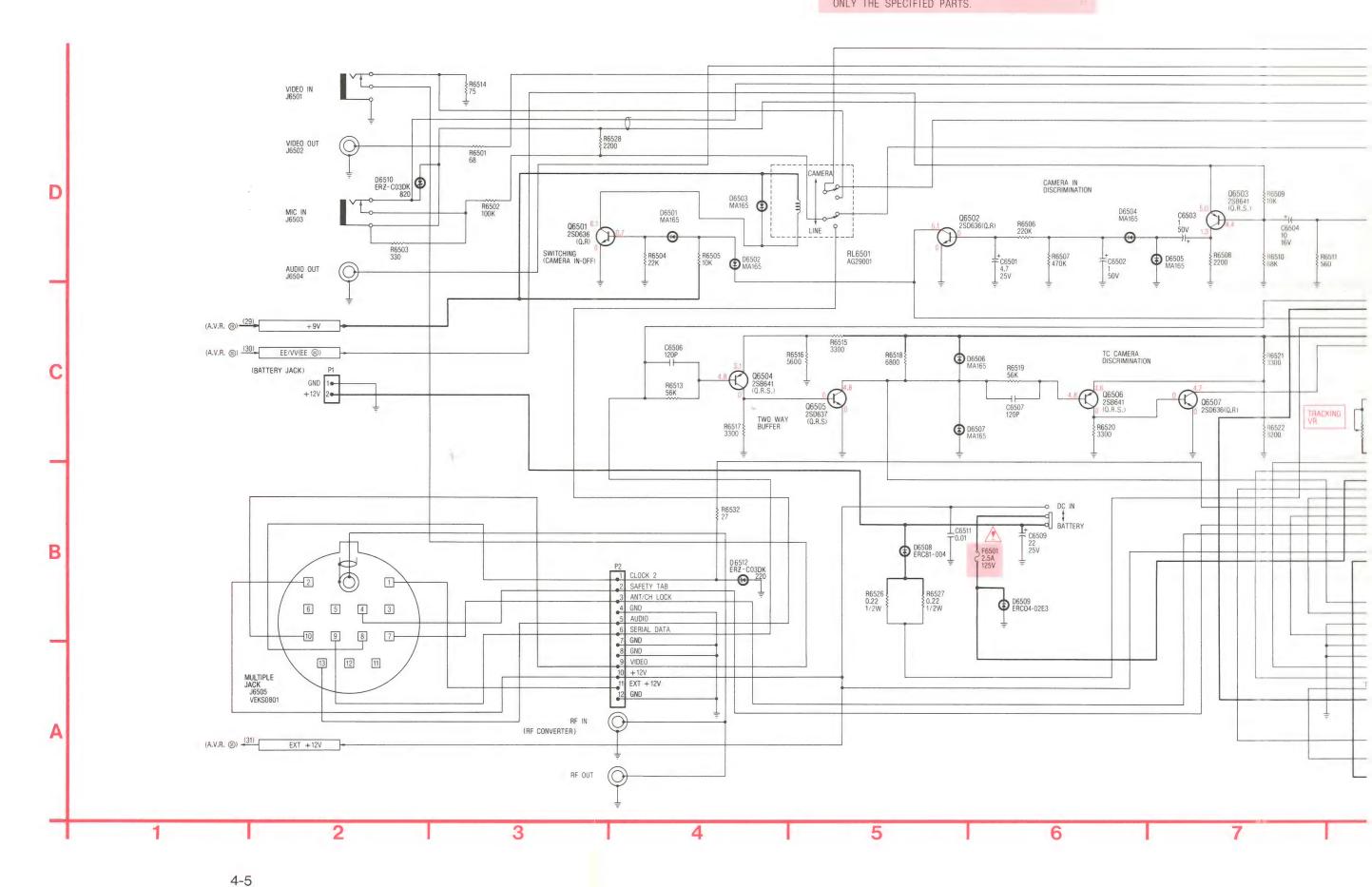
SERVO C	C.B.A.
Q1	3-E
Q2	3-E
Q3	2-B
Q5	4-E
Q6	2-E
0.7	4-B
Q11	3-F
Q12	3-E
Q13	3-E
Q14	2-E
Q15	3-D
Q16	2-D
Q17	3-D
Q18	2-C
Q19	2-D
Q20	3-E
Q21	3-E
Q22	3-E

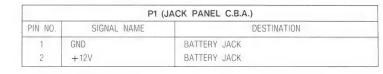




4-4







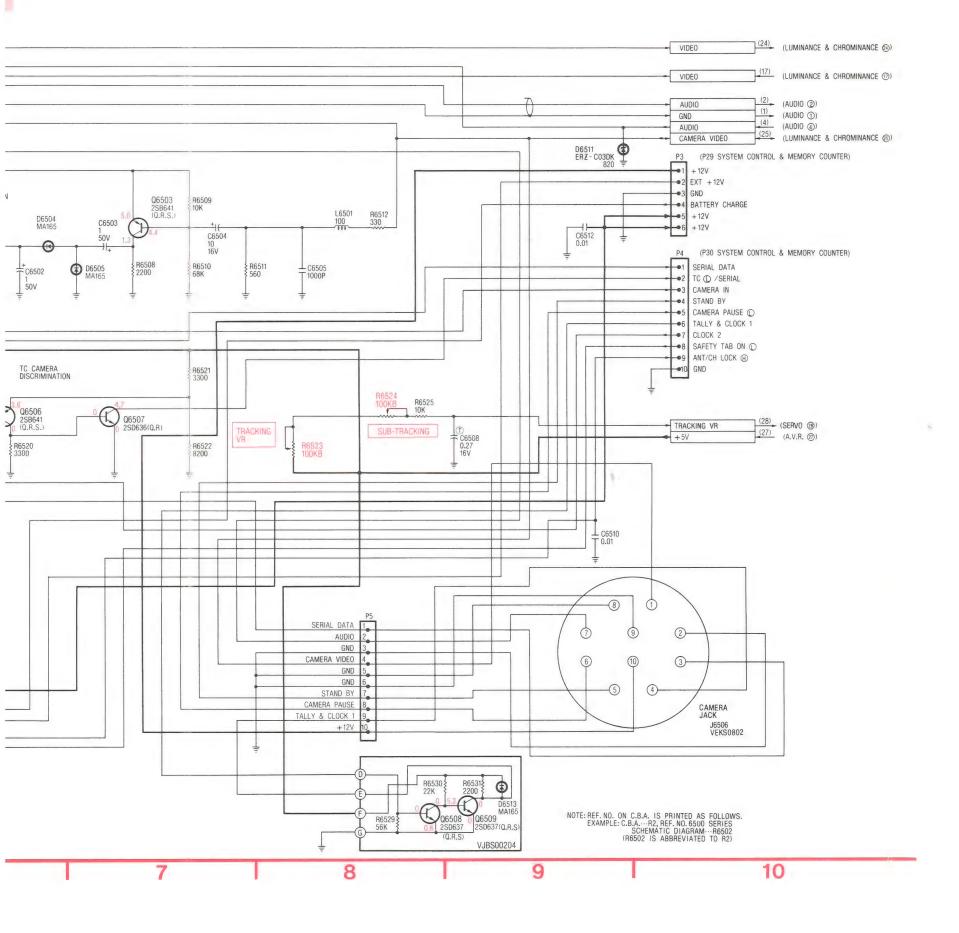
P2 (JACK PANEL C.B.A.)				
PIN NO.	SIGNAL NAME	DESTINATION		
1	CLOCK 2	J6505-8 MULTIPLE JACK		
2	SAFETY TAB	J6505-4 MULTIPLE JACK		
3	ANT/CH LOCK	J6505-7 MULTIPLE JACK		
4	GND			
5	AUDIO	J6505-13 MULTIPLE JACK		
6	SERIAL DATA	J6505-9 MULTIPLE JACK		
7	GND			
8	GND			
9	VIDEO	J6505-10 MULTIPLE JACK		
10	+12V	J6505-2 MULTIPLE JACK		
11	EXT +12V	J6505-1 MULTIPLE JACK		
12	GND			

	P3 (JACK PANEL C.B.A.)				
PIN NO. SIGNAL NAME DESTINATION					
1	+12V	P29-1 SYSTEM CONTROL & MEMORY COUNTER C.B.A.			
2	EXT +12V	P29-5 SYSTEM CONTROL & MEMORY COUNTER C.B.A.			
3	GND	P29-6 SYSTEM CONTROL & MEMORY COUNTER C.B.A.			
4	BATTERY CHARGE	P29-2 SYSTEM CONTROL & MEMORY COUNTER C.B.A.			
5	+12V	P29-3 SYSTEM CONTROL & MEMORY COUNTER C.B.A.			
6	+12V	P29-4 SYSTEM CONTROL & MEMORY COUNTER C.B.A			

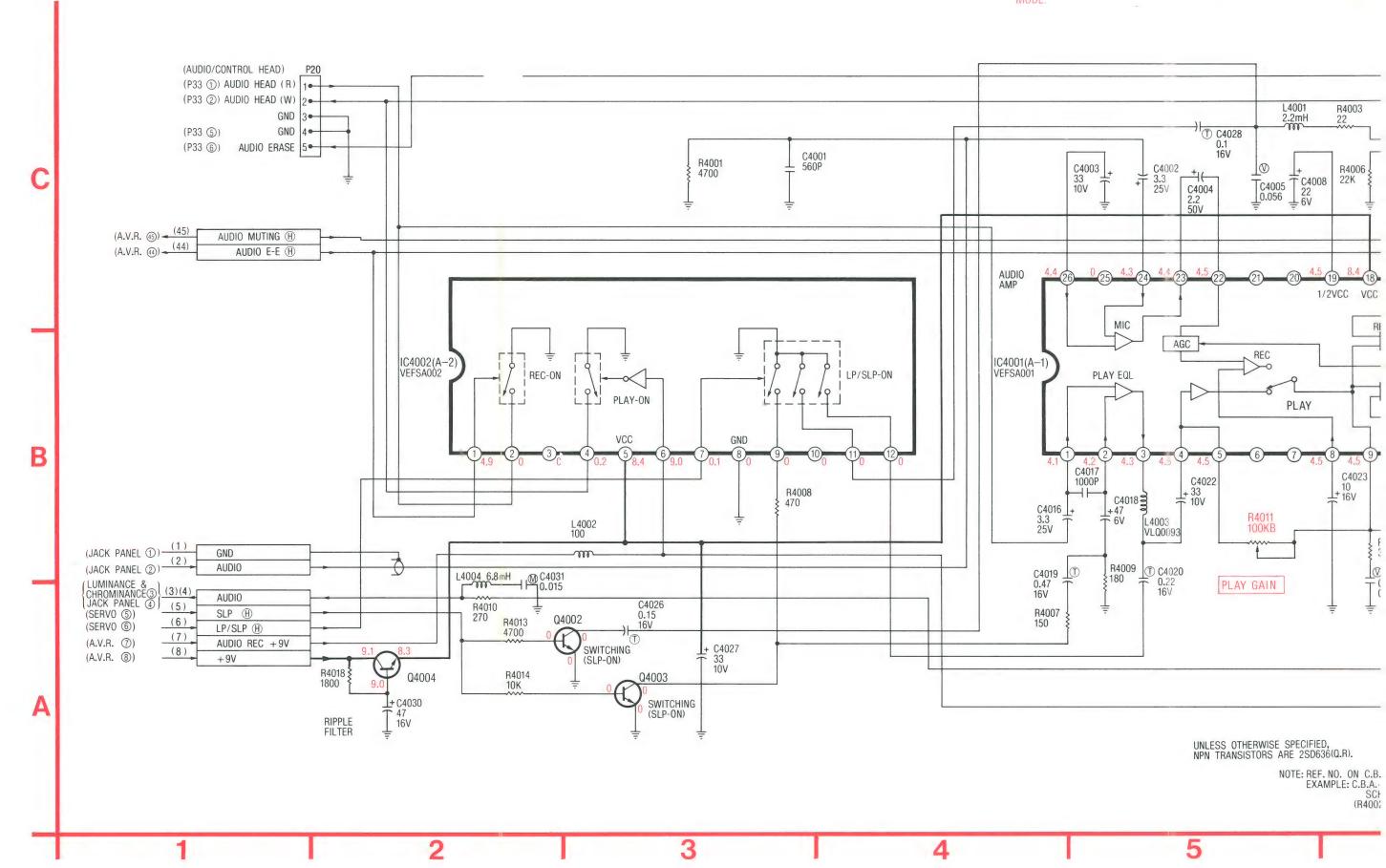
D.II. 110		JACK PA		,			
PIN NO.	SIGNAL NAME			DEST	INATION		
1	SERIAL DATA	P30-6	SYSTEM	CONTROL	& MEMORY	COUNTER	C.B.A
2	TC ① /SERIAL	P30-7	SYSTEM	CONTROL	& MEMORY	COUNTER	C.B.A
3	CAMERA IN	P30-3	SYSTEM	CONTROL	& MEMORY	COUNTER	C.B.A
4	STAND BY	P30-10	SYSTEM	CONTROL	& MEMORY	COUNTER	C.B.A
5	CAMERA PAUSE (P30-9	SYSTEM	CONTROL	& MEMORY	COUNTER	C.B.A
6	TALLY & CLOCK 1	P30-8	SYSTEM	CONTROL	& MEMORY	COUNTER	C.B.A
7	CLOCK 2	P30-5	SYSTEM	CONTROL	& MEMORY	COUNTER	C.B.A
8	SAFETY TAB ON ①	P30-4	SYSTEM	CONTROL	& MEMORY	COUNTER	C.B.A
9	ANT/CH LOCK (H)	P30-2	SYSTEM	CONTROL	& MEMORY	COUNTER	C.B.A
10							

P5 (JACK PANEL C.B.A.)				
PIN NO.	SIGNAL NAME	DESTINATION		
1	SERIAL DATA	J6506-3 CAMERA JACK		
2	AUDIO	J6506-7 CAMERA JACK		
3	GND	J6506-2 CAMERA JACK		
4	CAMERA VIDEO	J6506-1 CAMERA JACK		
5	GND	J6506-8 CAMERA JACK		
6	GND	J6506-9 CAMERA JACK		
7	STAND BY	J6506-5 CAMERA JACK		
8	CAMERA PAUSE	J6506-6 CAMERA JACK		
9	TALLY & CLOCK 1	J6506-4 CAMERA JACK		
10	+12V	J6506-10 CAMERA JACK		

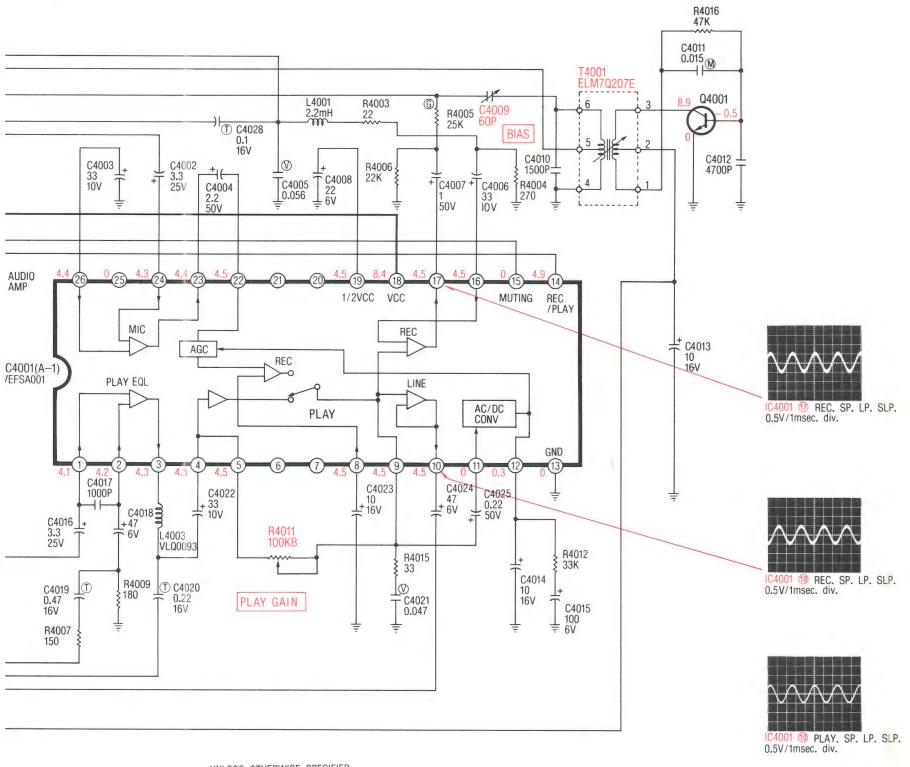
CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATIC DIAGRAM.



4-6 AUDIO SCHEMATIC DIAGRAM



THE VOLTAGE MEASUREMENTS GIVEN IN THIS DRAWING ARE COLOR BAR SIGNAL IN SP-REC MODE.



UNLESS OTHERWISE SPECIFIED, NPN TRANSISTORS ARE 2SD636(Q.R).

NOTE: REF. NO. ON C.B.A. IS PRINTED AS FOLLOWS. EXAMPLE: C.B.A...R2, REF. NO. 4000 SERIES SCHEMATIC DIAGRAM...R4002 (R4002 IS ABBREVIATED TO R2)

5 6 7

P20 (AUDIO C.B.A.)				
PIN NO.	SIGNAL NAME	DESTINATION		
1	AUDIO HEAD (R)	P33-1 AUDIO/CONTROL HEAD C.B.A.		
2	AUDIO HEAD (W)	P33-2 AUDIO/CONTROL HEAD C.B.A.		
3	GND			
4	GND	P33-5 AUDIO/CONTROL HEAD C.B.A.		
5	AUDIO ERASE	P33-6 AUDIO/CONTROL HEAD C.B.A.		

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATIC DIAGRAM.

	STOP			REC			PLAY		
	Е	В	С	Е	В	C	Е	В	C
Q4001	0	0.2	0.2	0	-0.5	8.9	0	0.4	0.4
Q4002	0	0	0	0	0	0	0	0	0
Q4003	0	0	0	0	0	0	0	0	0
04004	83	9.0	0.1	8.3	9.0	0.1	8.3	9.0	0.1

PIN NO.		IC 4001				
PIN NO.	STOP	REC	PLAY			
PIN 1	4.0	4.1	4.0			
PIN 2	4.2	4.2	4.2			
PIN 3	4.3	4.3	4.3			
PIN 4	4.5	4.5	4.5			
PIN 5	4.5	4.5	4.5			
PIN 6	*	*	*			
PIN 7	*	*	*			
PIN 8	4.5	4.5	4.4			
PIN 9	4.5	4.5	4.5			
PIN 10	4.5	4.5	4.5			
PIN 11	0	0	0			
PIN 12	0.3	0.3	0			
PIN 13	0	0	0			
PIN 14	5.0	4.9	0			
PIN 15	0	0	0			
PIN 16	4.5	4.5	4.5			
PIN 17	4.5	4.5	4.5			
PIN 18	8.3	8.4	8.2			
PIN 19	4.5	4.5	4.5			
PIN 20	*	*	*			
PIN 21	*	*	*			
PIN 22	4.4	4.5	4.4			
PIN 23	4.3	4.4	4.3			
PIN 24	4.2	4.3	4.3			
PIN 25	0	0	0			
PIN 26	4.3	4.4	4.3			

PIN NO.	NO		IC 4002	
	STOP	REC	PLAY	
PIN	1	5.0	4.9	0
PIN	2	0	0	0
PIN	3	0	0	0
PIN	4	0	0.2	0
PIN	5	8.3	8.4	8.2
PIN	6	0.2	9.0	0.3
PIN	7	0.1	0.1	0.1
PIN	8	0	0	0
PIN	9	0	0	0
PIN	10	0	0	0
PIN	11	0	0	0
PIN	12	0	0	0

VOLTAGE MEASUREMENTS: COLOR BAR SIGNAL IN SP MODE.

★: UNMEASURABLE OR UNNECESSARY.

4-6

1 CLOCK 2 2 SAFETY TAB 3 ANT/CH LOCK

5 AUDIO 6 SERIAL DATA

8 GND 9 VIDEO 10 + 12V 1 EXT +12V 12 GND

2 EXT +12V 4 BATTERY CHARGE

1 SERIAL DATA 2 TC O SERIAL CAMERA IN 4 STAND BY CAMERA PAUSE (TALLY & CLOCK 1 CLOCK 2 8 SAFETY TAB ON (D)

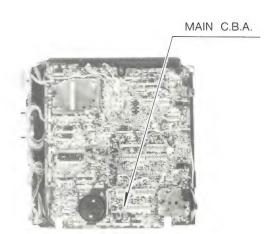
9 ANT/CH LOCK (H)

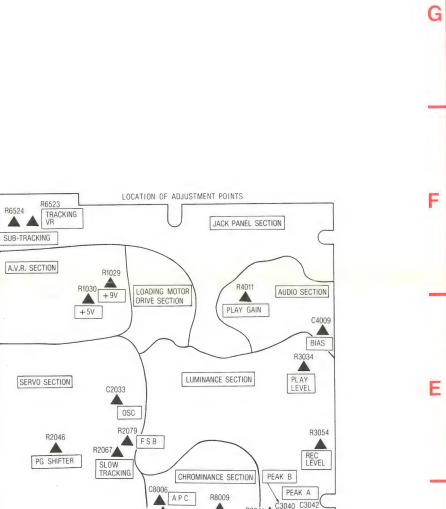
1 SERIAL DATA

4 CAMERA VIDEO

7 STAND BY CAMERA PAUSI IMPORTANT SAFETY NOTICE:

COMPONENTS IDENTIFIED BY THE SIGN A HAVE IS SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS. USE ONLY THE SPECIFIED PARTS.





REC B HEAD Q

JACK PANEL SECTION

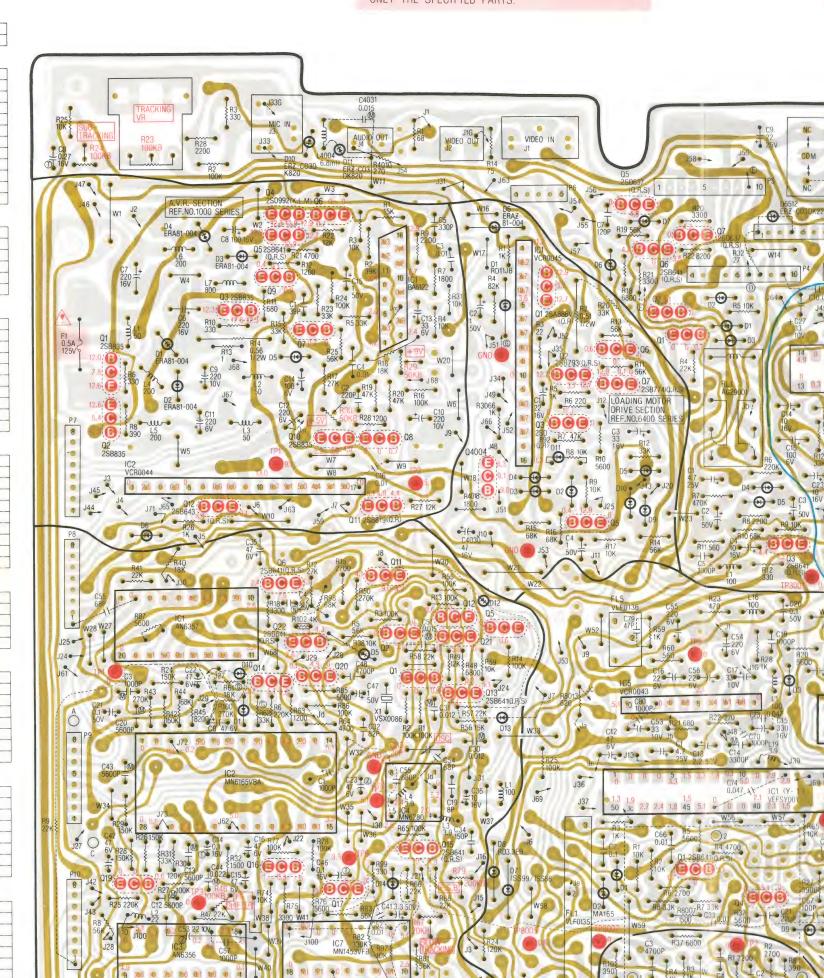
A HEAD Q

16

LOADING MOTOR DRIVE SECTION

LOCATION OF TEST POINTS





MAIN C.B.A. (VEPS0317A)

1 GND 2 +12V

1 CLOCK 2 2 SAFETY TAB 3 ANT/CH LOCK

SERIAL DATA

9 VIDEO 10 + 12V 11 EXT +12V 12 GND

2 EXT +12V 4 BATTERY CHARGE

1 SERIAL DATA 2 TC O SERIAL 4 STAND BY 5 CAMERA PAUSE TALLY & CLOCK CLOCK 2 8 SAFETY TAB ON C ANT/CH LOCK (F) 10 GND

1 SERIAL DATA

4 CAMERA VIDEO 5 GND 6 GND 7 STAND BY 8 CAMERA PAUSE 9 TALLY & CLOCK

2 GND 3 RF + 9V 4 VIDEO (RE 5 AUDIO

1 AUDIO EE H AUDIO MUTING

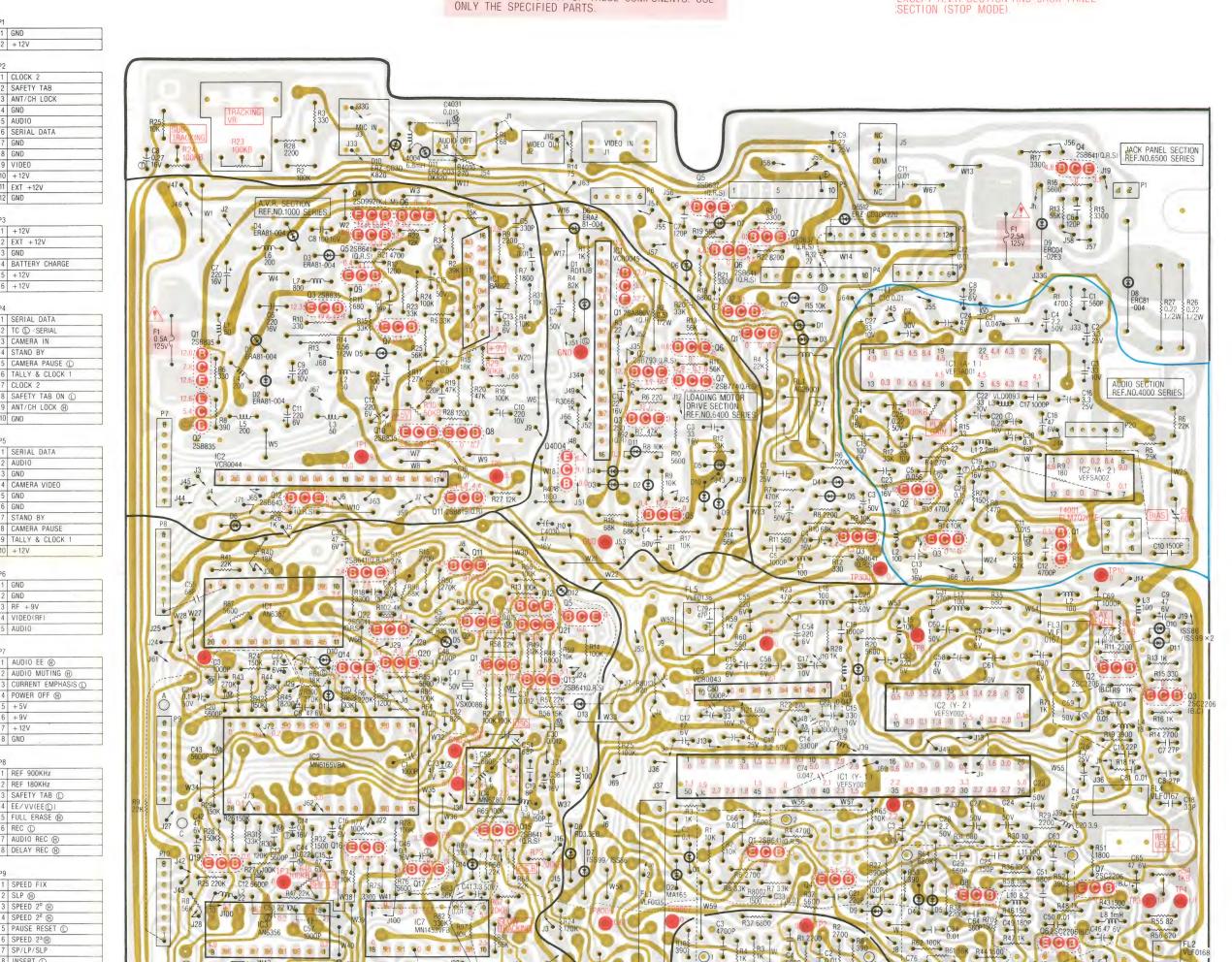
POWER OFF (H)

+ 12V 8 GND

1 REF 900KHz 2 REF 180KHz 3 SAFETY TAB (4 EE/VV(EE () FULL ERASE (AUDIO REC 8 DELAY REC

1 SPEED FIX 3 SPEED 2° SPEED 22 PALISE RESET (SPEED 23(F SP/LP/SLP

IMPORTANT SAFETY NOTICE: COMPONENTS IDENTIFIED BY THE SIGN A HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS. USE THE VOLTAGE MEASUREMENTS GIVEN IN THIS DRAWING ARE COLOR BAR SIGNAL IN SP-REC EXCEPT A.V.R. SECTION AND JACK PANEL SECTION (STOP MODE).



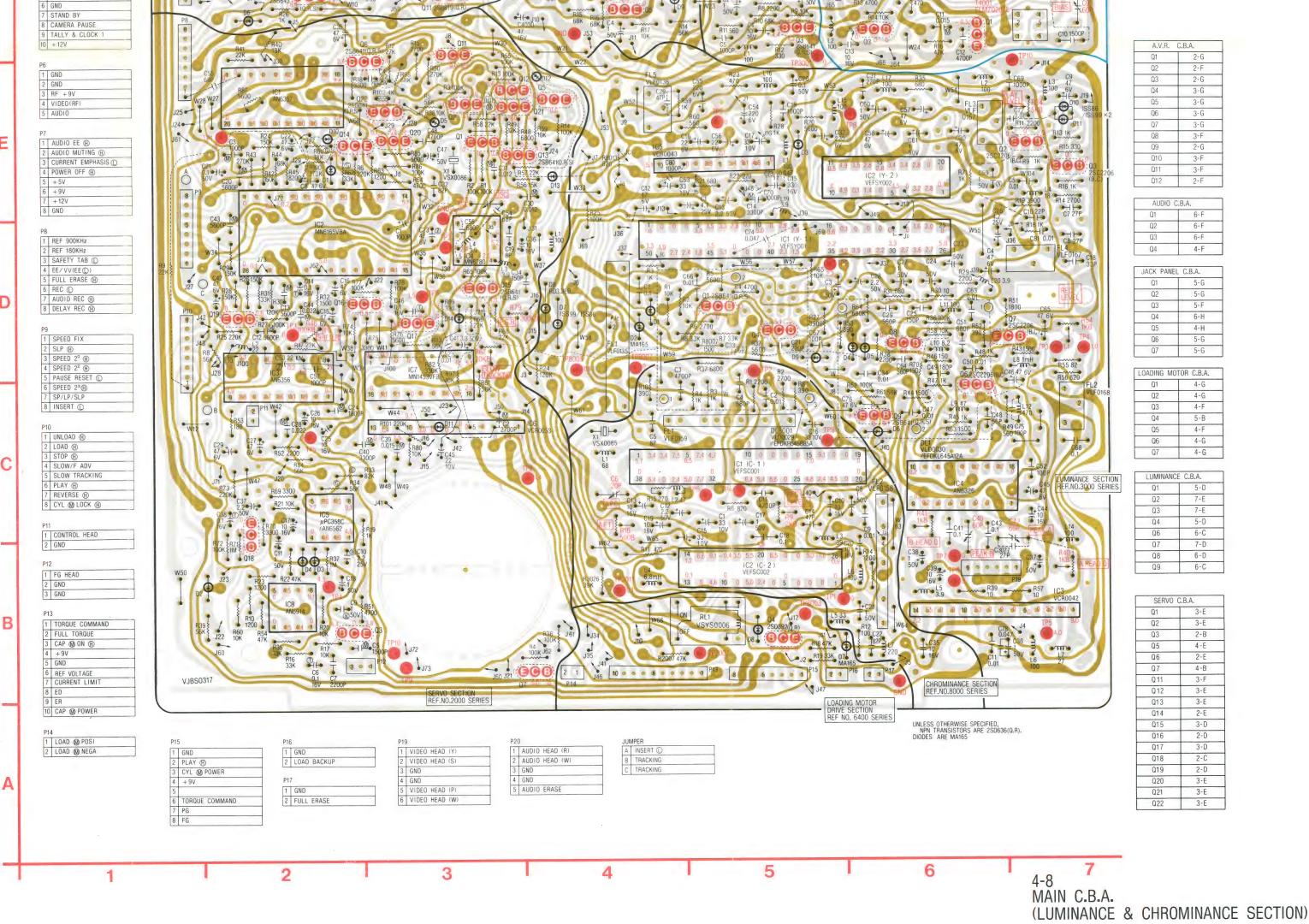
Q1	2-G
Q2	2-F
Q3	2-G
Q4	3-G
Q5	3-G
Q6	3-G
Q7	3-G
Q8	3-F
Q9	2-G
Q10	3-F
Q11	3-F
Q12	2-F

A.V.R. C.B.A.

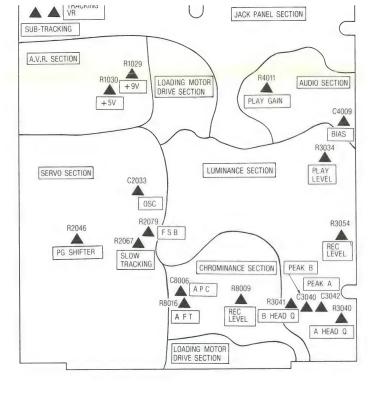
AUDIO C	.B.A.
Q1	6-F
Q2	6-F
Q3	6-F
Q4	4-F

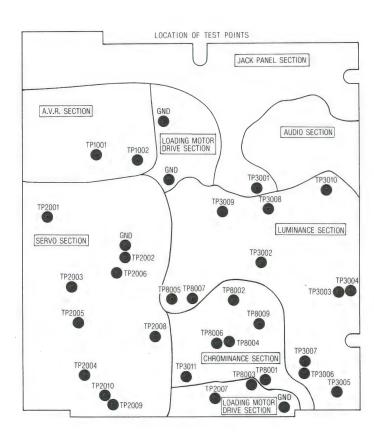
JACK PANEL C.B.A.				
Q1	5-G			
Q2	5-G			
Q3	5-F			
Q4	6-H			
Q5	4-H			
Q6	5-G			
Q7	5-G			

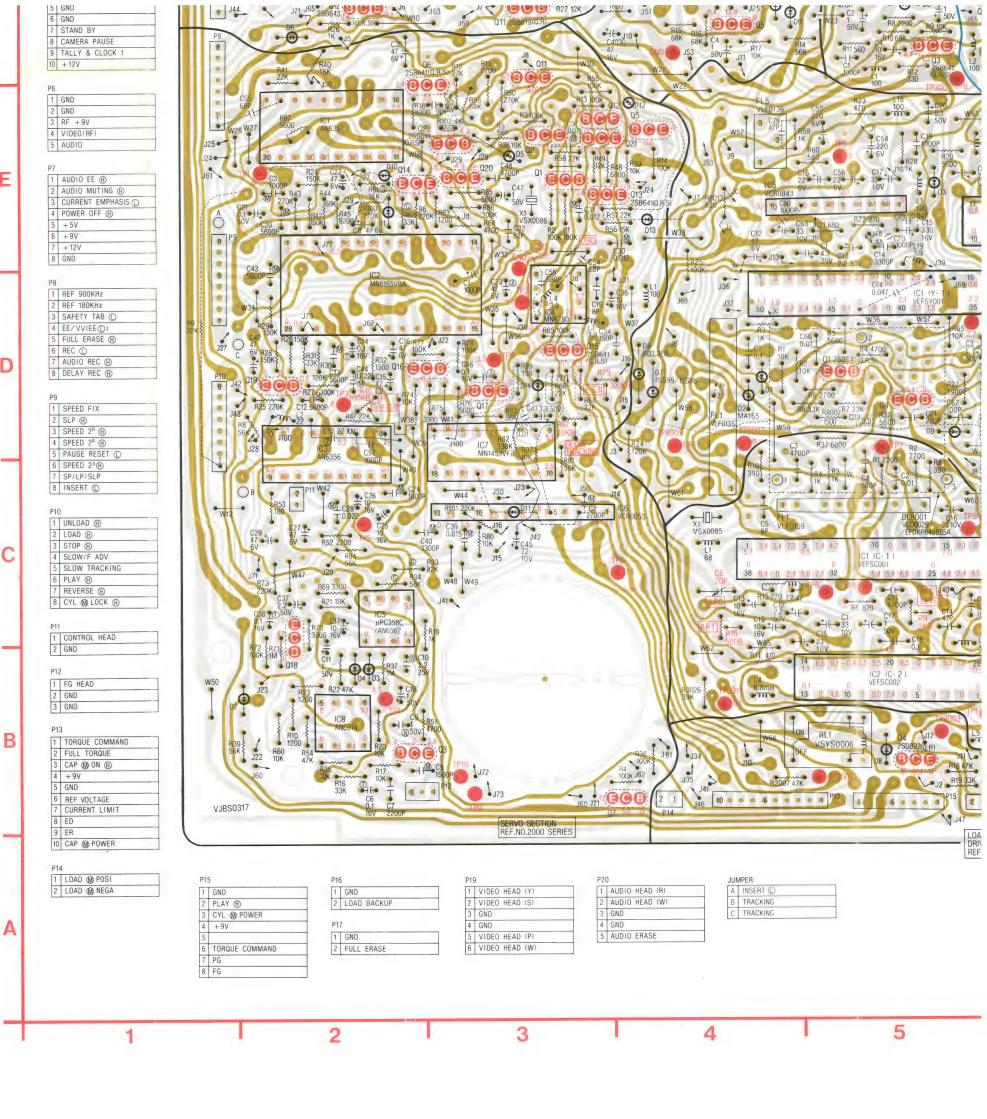
.OADING	MOTOR	R C.B.A.	
Q1		4-G	
Q2		4-G	
Q3		4-F	

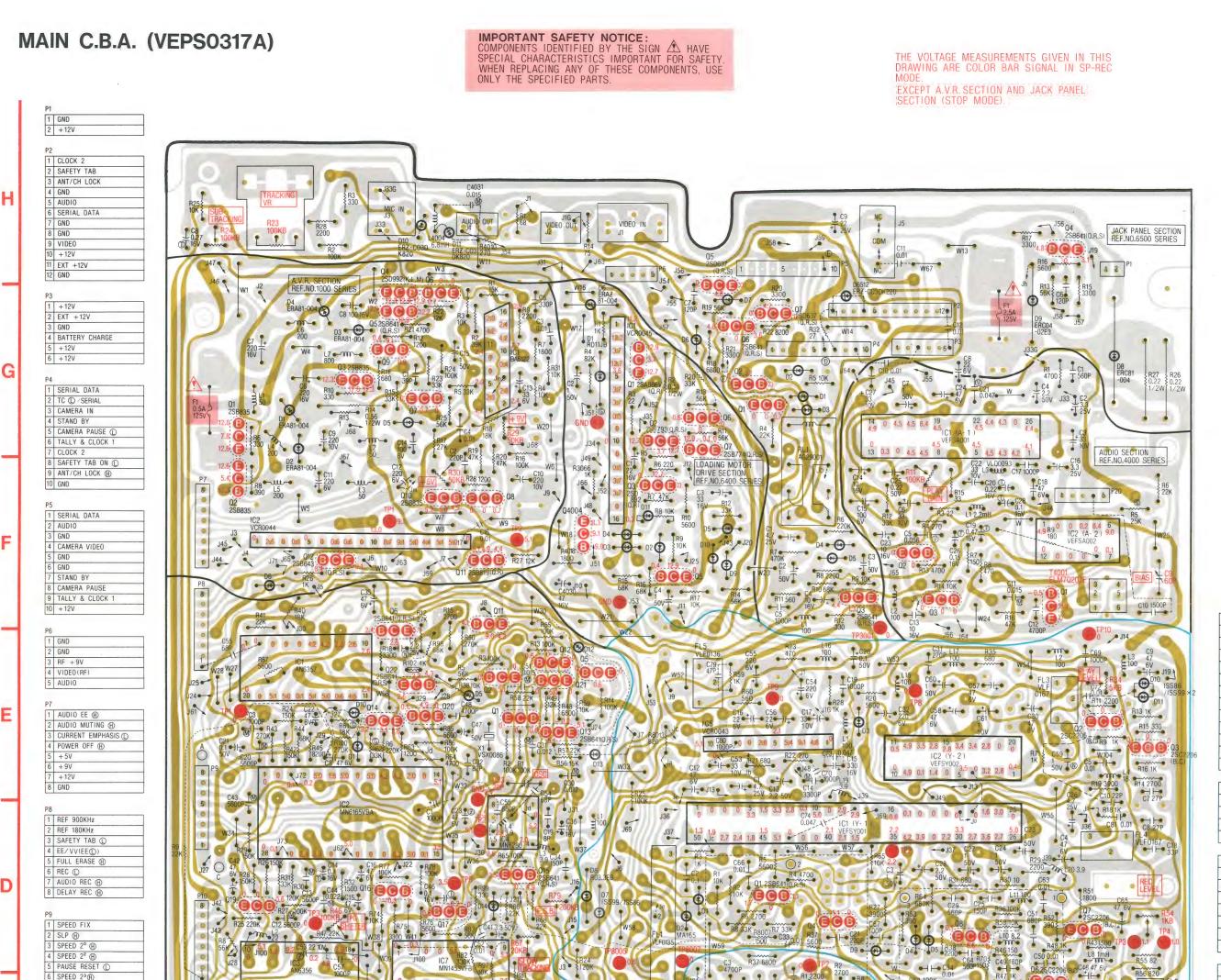


D

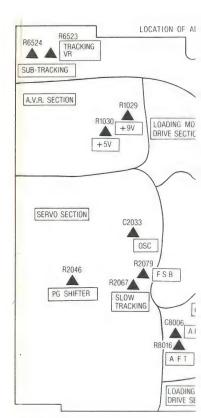








7 SP/LP/SLF 8 INSERT (D



C.B.A.
2-G
2-F
2-G
3-G
3-G
3-G
3-G
3-F
2-G
3-F
3-F
2-F

AUDIO (C.B.A.
Q1	6-F
Q2	6-F
Q3	6-F
Q4	4-F

JACK PANEL	L C.B.A.
Q1	5-G
Q2	5-G
Q3	5-F
Q4	6-H
Q5	4-H
Q6	5-G
Q7	5-G

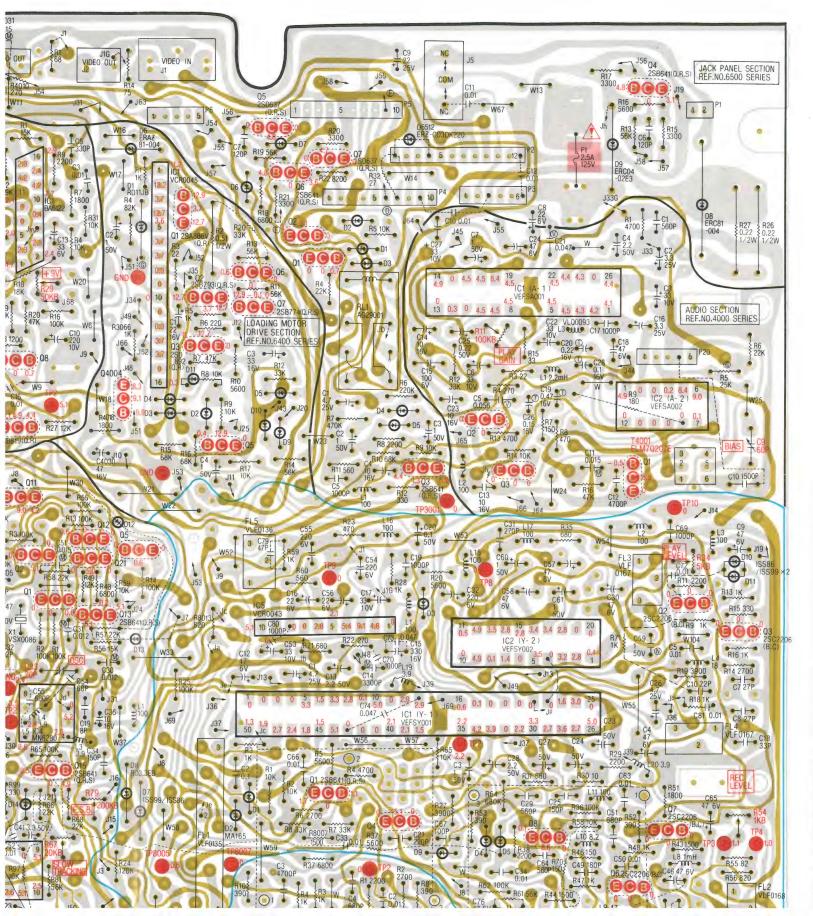
PIN 1
PIN 2
PIN 2
PIN 4
PIN 5
PIN 6
PIN 7
PIN 8
PIN 10
PIN 11
PIN 12
PIN 14
PIN 15
PIN 16
PIN 17
PIN 17
PIN 18
PIN 18
PIN 18
PIN 18

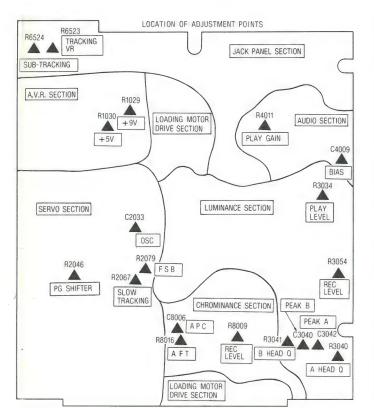
OADING	MOT	0R	C.B.A.	
Q1			4-G	
02			1-G	

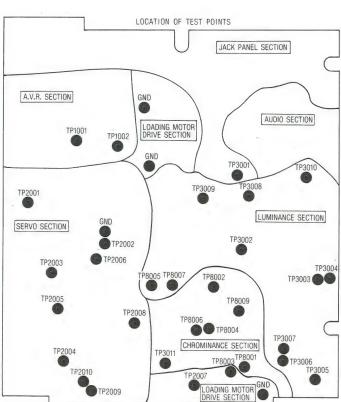
IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN AN HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE
ONLY THE SPECIFIED PARTS.

THE VOLTAGE MEASUREMENTS GIVEN IN THIS DRAWING ARE COLOR BAR SIGNAL IN SP-REC MODE.

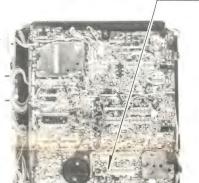
EXCEPT A.V.R. SECTION AND JACK PANEL SECTION (STOP MODE).







MAIN C.B.A.



VOLTAGE MEASUREMENTS:

1. CUE, REVIEW

COLOR BAR SIGNAL IN SLP MODE

★: UNMEASURABLE OR UNNECESSARY.

COLOR BAR SIGNAL IN SP MODE.

Q1	2-G
Q2	2-F
Q3	2-G
Q4	3-G
Q5	3-G
Q6	3-G
Q7	3-G
Q8	3-F
Q9	2-G
Q10	3-F
Q11	3-F
Q12	2-F

A.V.R. C.B.A.

AUDIO C	.B.A.
Q1	6-F
Q2	6-F
Q 3	6-F
Q4	4-F

JACK PANEL	C.B.A.
Q1	5-G
Q2	5-G
Q3	5-F
Q4	6-H
Q5	4-H
Q6	5-G
Q7	5-G

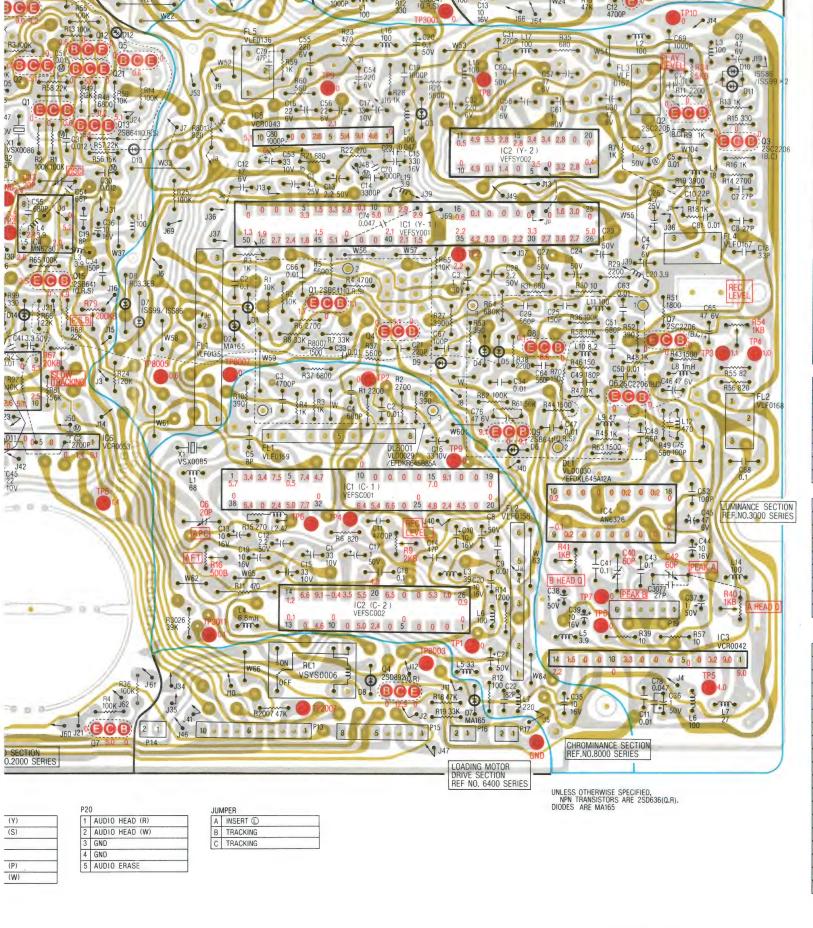
_				
	LOADING	MOT	OR	C.B.A.
	Q1			4-G
Γ	02			1-G

	STOP REC			PLAY			CUE			REV					
	Е	В	С	E	В	C	Е	В	C	E	В	C	Е	В	C
Q3001	1.7	1.0	1.7	1.7	1.1	0	0	2.1	1.7	0	2.1	1.7	0	2.1	1.7
Q3002	0.5	1.2	4.0	0	0	0	0.5	1.2	4.0	0.5	1.2	4.1	0.5	1.2	4.1
03003	1.2	2.0	3.7	0	0	0	1.2	2.0	3.7	1.2	2.0	3.7	1.2	2.0	3.7
Q3004	0	0	5.0	0	0	5.1	0	0	5.0	0	0	4.9	0	0	4.9
03006	1.0	1.7	4.0	0	0	0	1.0	1.7	4.0	1.0	1.7	4.0	1.0	1.7	4.0
Q3007	2.5	3.2	5.0	0	0	0	2.5	3.2	5.0	2.5	3.2	5.0	2.5	3.2	5.0
03008	4.5	4.5	5.8	0.1	0	6.6	4.5	4.9	5.8	4.5	0	5.7	4.5	4.9	5.7
03009	9.1	9.1	0	9.1	9.1	0	9.1	9.1	0	9.1	9.0	0	9.1	9.0	0

DIAL NO			IC 3001		DIN NO			
PIN NO.	STOP	REC	PLAY	CUE	REV	PIN NO.	STOP	T
PIN 1	0	0	0	0	0	PIN 1	0.5	Ť
PIN 2	0	0	0	0	0	PIN 2	0.5	İ
PIN 3	3.5	0	3.5	3.5	3.4	PIN 3	0	T
PIN 4	1.0	0	1.1	1.1	1.1	PIN 4	0	Ť
PIN 5	3.2	3.3	3.2	3.2	3.2	PIN 5	4.9	T
PIN 6	1.5	1.5	0.6	0.6	0.7	PIN 6	0	Ť
PIN 7	3.3	3.3	3.3	3.3	3.3	PIN 7	0	İ
PIN 8	2.8	2.8	2.8	2.8	2.8	PIN 8	0	1
PIN 9	0	0.1	0	0.1	0.1	PIN 9	3.3	Ī
PIN 10	5.0	5.0	5.1	5.0	5.0	PIN 10	0	Ť
PIN 11	0	0	0	0	0	PIN 11	0	Ť
PIN 12	2.9	2.9	3.3	3.3	3.3	PIN 12	0	Ť
PIN 13	2.9	2.9	2.6	2.6	2.6	PIN 13	0.6	Ī
PIN 14	*	*	*	*	*	PIN 14	0.6	Ť
PIN 15	*	*	*	*	*			
PIN 16	0.6	0.6	1.7	1.7	1.7			
PIN 17	0.1	0.1	4.1	4.2	4.1	DIN NO		_
PIN 18	0.5	0	0.5	0.5	0.5	PIN NO.	STOP	T
PIN 19	0	0	0	0	0	PIN 1	4.9	Ť
PIN 2n	n	n	0	n	n	PINI 2	Λ	Ť

DIM NO			IC 3003		
PIN NO.	STOP	REC	PLAY	CUE	REV
PIN 1	0.5	9.0	0.3	0.3	0.3
PIN 2	0.5	9.0	0.3	0.3	0.4
PIN 3	0	3.2	0	0	0
PIN 4	0	0	0	0	0
PIN 5	4.9	0	4.9	4.9	4.9
PIN 6	0	0	0	0	0
PIN 7	0	0	0	0	0
PIN 8	0	0	0	0	0
PIN 9	3.3	3.3	0.1	G.1	0.1
PIN 10	0	0	0	0	0
PIN 11	0	0	0	0	0
PIN 12	0	0	0	0	0
PIN 13	0.6	1.5	0.3	0.3	0.3
PIN 14	0.6	2.2	0.3	0.3	0.3

U	0	U	U	PIN 12	U	0	U	U	1 0
1.5	0.3	0.3	0.3	PIN 13	0	0	0	0	0
2.2	0.3	0.3	0.3	PIN 14	0.1	0	0.1	4.2	4
				PIN 15	7.0	7.0	7.0	7.0	7
				PIN 16	9.1	9.1	9.1	9.1	9
	IC 3004			PIN 17	0	0	0	0	0
REC	PLAY	CUE	REV	PIN 18	0	0	0	0	0
0	4.9	4.9	4.9	PIN 19	0	0	0	0	0
n	n	n	25	DIM 20	Λ	n	n	n	0



Q1	2-G
Q2	2-F
Q3	2-G
Q4	3-G
Q5	3-G
Q6	3-G
Q7	3-G
Q8	3-F
Q9	2-G
Q10	3-F
Q11	3-F
Q12	2-F

AUDIO (C.B.A.
Q1	6-F
Q2	6-F
Q3	6-F
Q4	4-F

JACK PANI	EL C.B.A.
Q1	5-G
Q2\	5-G
Q 3	5-F
Q4	6-H
Q5	4-H
Q6	5-G
Q7	5-G

LOADING MOT	TOR C.B.A.
Q1	4-G
Q2	4-G
Q3	4-F
Q4	5-B
Q5	4-F
Q6	4-G
Q7	4-G

LUMINAN	CE C.B.A.
Q1	5-D
Q2	7-E
Q3	7-E
Q4	5-D
Q6	6-C
Q7	7-D
Q8	6-D
Q9	6-C
	•

SERVO C.B.A.

Q1	3-E
Q2	3-E
Q3	2-B
Q5	4-E
Q6	2-E
Q7	4-B
Q 11	3-F
Q12	3-E
Q13	3-E
Q14	2-E
Q15	3-D
Q16	2-D
Q17	3-D
Q18	2-C
Q19	2-D
Q20	3-E
Q21	3-E
Q22	3-E



	STOP			REC			PLAY			CUE			REV		
	E	В	C	E	В	С	Е	В	С	Ε	В	С	E	В	C
Q3001	1.7	1.0	1.7	1.7	1.1	0	0	2.1	1.7	0	2.1	1.7	0	2.1	1.7
Q3002	0.5	1.2	4.0	0	0	0	0.5	1.2	4.0,	0.5	1.2	4.1	0.5	1.2	4.1
03003	1.2	2.0	3.7	0	0	0	1.2	2.0	3.7	1.2	2.0	3.7	1.2	2.0	3.7
Q3004	0	0	5.0	0	0	5.1	0	0	5.0	0	0	4.9	0	0	4.9
Q3006	1.0	1.7	4.0	0	0	0	1.0	1.7	4.0	1.0	1.7	4.0	1.0	1.7	4.0
Q3007	2.5	3.2	5.0	0	0	0	2.5	3.2	5.0	2.5	3.2	5.0	2.5	3.2	5.0
03008	4.5	4.5	5.8	0.1	0	6.6	4.5	4.9	5.8	4.5	0	5.7	4.5	4.9	5.7
Q3009	9.1	9.1	0	9.1	9.1	0	9.1	9.1	0	9.1	9.0	0	9.1	9.0	0

			IC 3001		
PIN NO.	STOP	REC	PLAY	CUE	REV
PIN 1	0	0	0	0	0
PIN 2	0	0	0	0	0
PIN 3	3.5	0	3.5	3.5	3.4
PIN 4	1.0	0	1.1	1.1	1.1
PIN 5	3.2	3.3	3.2	3.2	3.2
PIN 6	1.5	1.5	0.6	0.6	0.7
PIN 7	3.3	3.3	3.3	3.3	3.3
PIN 8	2.8	2.8	2.8	2.8	2.8
PIN 9	0	0.1	0	0.1	0.1
PIN 10	5.0	5.0	5.1	5.0	5.0
PIN 11	0	0	0	0	0
PIN 12	2.9	2.9	3.3	3.3	3.3
PIN 13	2.9	2.9	2.6	2.6	2.6
PIN 14	*	*	*	*	*
PIN 15	*	*	*	*	*
PIN 16	0.6	0.6	1.7	1.7	1.7
PIN 17	0.1	0.1	4.1	4.2	4.1
PIN 18	0.5	0	0.5	0.5	0.5
PIN 19	0	0	0	0	0
PIN 20	0	0	0	0	0
PIN 21	4.1	0	4.1	4.0	4.1
PIN 22	2.5	0	2.5	2.5	2.5
PIN 23	1.3	1.6	1.3	1.3	1.3
PIN 24	2.9	3.0	3.0	3.0	3.0
PIN 25	0.5	0	0.5	0,5	0,5
PIN 26	4.9	5.0	4.9	4.9	4.9
PIN 27	2.6	2.7	2.6	2.6	2.6
PIN 28	3.5	3.6	3.4	3.4	3,5
PIN 29	2.7	2.7	2.7	2.6	2.6
PIN 30	3.2	3.3	0	3.1	3.1
PIN 31	2.1	2.2	2.1	2.1	2.1
PIN 32	0	0	0	0	0
PIN 33	3.8	3.9	3.8	3.8	3.8
PIN 34	2.2	4.2	0.1	0.1	0.1
PIN 35	2.1	2.2	1.9	1.9	1.9
PIN 36	*	*	*	*	*
PIN 37	*	*	*	*	*
PIN 38	1.5	1.5	1.7	1.5	1.5
PIN 39	2.0	2.1	1.9	1.9	1.9
PIN 40	2.1	2.1	2.1	2.1	2.1
PIN 41	0	0	0	0	0
PIN 42	0	0	0	0	0
PIN 43	0	0	0	0	0
PIN 44	5.0	5.1	5.0	5.0	5.0
PIN 45	1.5	1.5	1.5	1.5	1.5
PIN 45	1.7	1.8	1.7	1.7	1.7
PIN 46	2.4	2.4	2.3	2.3	2.3
PIN 47	2.4	2.4	2.7	2.7	2.3
PIN 48	1.9	1.9	1.9	1.9	1.9
PIN 50	1.3	1.3	1.3		
EDM OUT	1.5	1,3	1 1.3	1.3	1.3

PIN 4	0	0	0	0	0
PIN 5	4.9	0	4.9	4.9	4.
PIN 6	0	0	0	0	0
PIN 7	0	0	0	0	0
PIN 8	0	0	0	0	0
PIN 9	3.3	3.3	0.1	0.1	0.
PIN 10	0	0	0	0	0
PIN 11	0	0	0	0	0
PIN '12	0	0	0	0	0
PIN 13	0.6	1.5	0.3	0.3	0.
PIN 14	0.6	2.2	0.3	0.3	0.
PIN NO.			IC 3004		
	STOP	REC	PLAY	CUE	RI
PIN 1	4.9	0	4.9	4.9	4.
PIN 2	0	0	0	0	2.
PIN 3	0.8	0	0.8	0.8	0.
PIN 4	0.7	0	0.7	0.7	0.
PIN 5	0	0	0	0	0
PIN 6	0.7	0	0.7	0.6	0
PIN 7	0.8	0	0.8	0.8	0.
PIN 8	3.2	0.2	3.2	3.1	3.
PIN 9	3.3	-0.1	3.3	3.2	3.
PIN 10	2.8	0	2.8	2.8	2.
PIN 11	3.1	0.2	3.1	3.1	3.
PIN 12	1.7	0	1.7	1.7	1.
PIN 13	3.2	0.2	3.2	3.2	3.
PIN 14	0	0	0	0	0
PIN 15	4.5	0	0	4.5	4.
PIN 16	3.4	0	3.3	3.2	3.
PIN 17	3.2	0	0	3.2	3.
PIN 18	3.2	0.2	3.2	3.2	3
PIN NO.	STOP	REC	IC 3005	CUE	Di
PIN 1	0	0		-	RE
PIN 2	4.8	4.8	4.7	4.7	0
rin Z	4.8	4.8	4./	4./	4.

PIN 4 5.4 5.4 5.4 5.4 5.4 5.4 PIN 5 2.1 2.1 2.1 2.1 2.1 PIN 6 2.8 2.8 2.7 2.7 2.7

PIN 7 0 0 9.0 3.4 9.0 PIN 8 0 0 8.4 8.4 8.4 PIN 9 0 0 7.0 7.0 7.0

PIN NO. STOP REC PLAY CUE REV
PIN 1 0.5 9.0 0.3 0.3 0.3
PIN 2 0.5 9.0 0.3 0.3 0.4
PIN 3 0 3.2 0 0 0

COMM 4 0 0 0 0 0

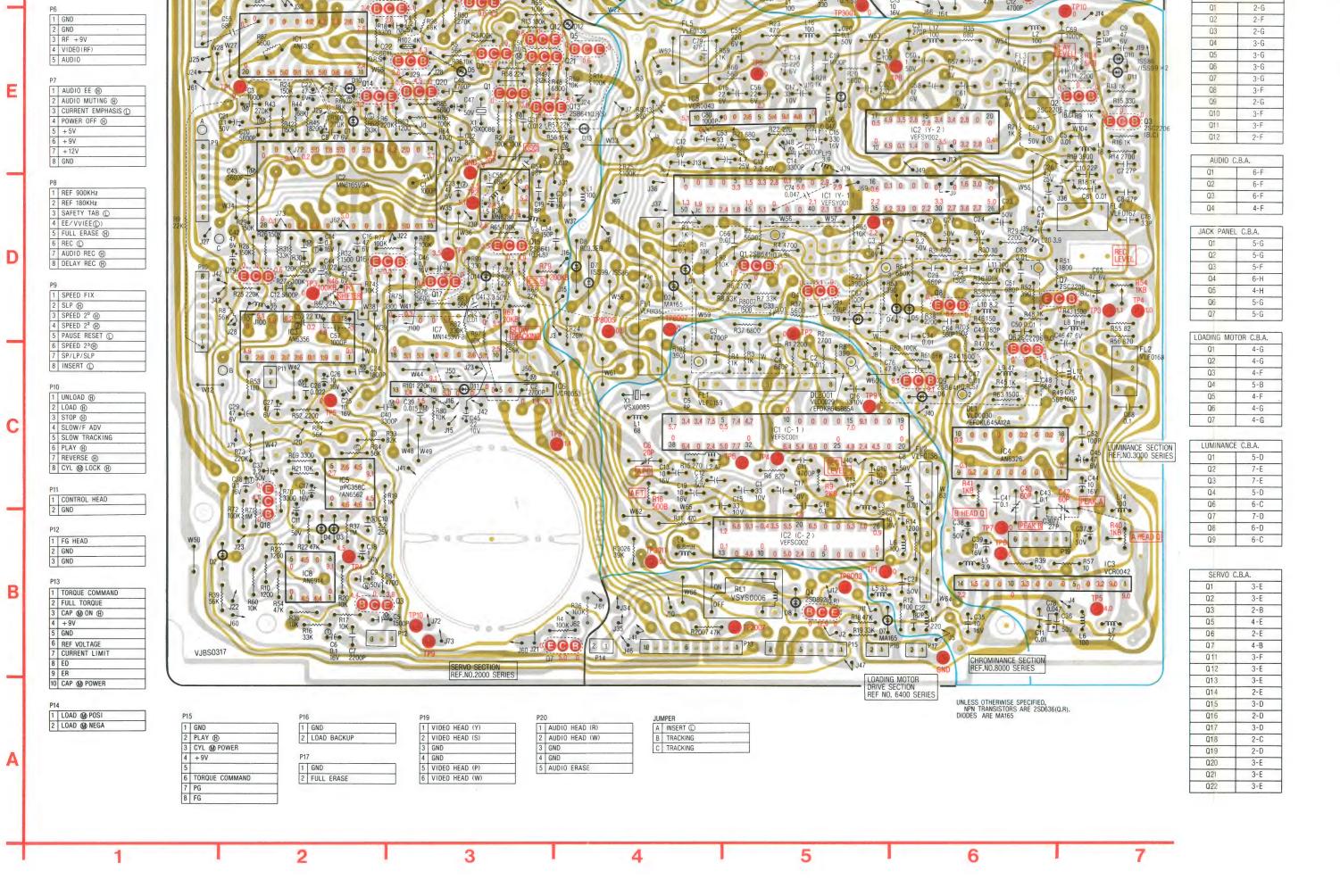
NO.			IC 3002			TP NO.	STOP	REC	PLAY	CUE	RE
NU.	STOP	REC	PLAY	CUE	REV	TP3001	0	0	7.0	6.9	7.
1 1	0.4	0	0.4	0.4	0.4	TP3002	2.2	2.2	1.9	0	1.
1 2	2.8	0	2.8	2.8	2.8	TP3003	1.1	1.1	1.3	1.3	1.
1 3	3.2	0.2	3.2	3.2	3.2	TP3004	1.0	1.0	1.2	0	1.
4	0	0	0	0	0	TP3005	0	4.0	0	0	0
1 5	3.5	0	3.5	3.5	3.4	TP3006	0	0	0	0	0
1 6	0	0	0	0	0	TP3007	0	0	0	0	0
7	1.4	0	1.4	1.4	1.4	TP3008	2.1	0	3.4	3.4	3.
8	0	0	0.1	0.1	0.1	TP3009	0	0	0	0	0
9	4.9	0	4.9	4.8	4.8	TP3010	5.0	0	0	0	0
1 10	0	0	0	0	0	TP3011	3.2	0.1	0.1	0.1	0.
111	0.5	0	0.5	0.4	0.4						
1 12	4.9	0	4.9	4.9	4.9						
1 13	2.1	0	3.5	3.4	3.4	TP NO.	STOP	REC	PLAY	CUE	RE
1 14	2.8	0	2.8	2.7	2.8	TP8001	5.0	0	5.0	5.0	5.
15	2.8	0	2.8	2.8	2.8	TP8002	0	0	0	0	0
16	3.4	0	3.4	3.4	3.4	TP8005	0.7	0.6	0.7	0.7	0.
17	3.4	0	3.4	3.4	3.4	TP8007	0	0	0	0	0
1 18	2.8	0	2.8	2.7	2.8	TP8009	0	0	0	0	0
19	0	0	0	0	0						
20	0	0	0	0	0						

DIN NO	IC 8001							
PIN NO.	STOP	REC	PLAY	CUE	REV			
PIN 1	5.5	5.7	5.7	5.7	5.7			
PIN 2	3.4	3.4	3.4	3.4	3.4			
PIN 3	3.4	3.4	3.4	3.4	3.4			
PIN 4	7.4	7.5	7.5	7.5	7.5			
PIN 5	0.6	0.5	0.5	0.5	0.5			
PIN 6	7.4	7.4	7.4	7.4	7.4			
PIN 7	4.7	4.7	4.7	4.7	4.7			
PIN 8	*	*	*	*	*			
PIN 9	*	*	*	*	*			
PIN 10	0	0	0	0	0			
PIN 11	0	0	0	0	0			
PIN 12	0	0	0	0	0			
PIN 13	0	0	0	0	0			
PIN 14	0.1	0	0.1	4.2	4.2			
PIN 15	7.0	7.0	7.0	7.0	7.0			
PIN 16	9.1	9.1	9.1	9.1	9.1			
PIN 17	0	0	0	0	0			
PIN 18	0	0	0	0	0			
PIN 19	0	0	0	0	0			
PIN 20	0	0	0	0	0			
PIN 21	0	0	0	0	0			
PIN 22	4.5	4.5	4.6	4.6	4.5			
PIN 23	2.4	2.4	2.5	2.6	2.6			
PIN 24	4.9	4.8	4.9	4.9	4.9			
PIN 25	0	0	0	0	0			
PIN 26	0	0	0	0	0			
PIN 27	5.8	6.6	5.8	5.7	5.7			
PIN 28	5.1	5.0	5.1	5.1	5.0			
PIN 29	6.4	6.4	6.4	6.4	6.4			
PIN 30	*	*	*	*	*			
PIN 31	*	*	*	*	*			
PIN 32	0	0	0	0	0			
PIN 33	7.7	7.7	7.7	7.6	7.6			
PIN 34	4.9	5.0	5.0	5.0	5.0			
PIN 35	1.3	2.4	2.4	2.3	2.3			
PIN 36	0	0	0	0	0			

PIN 37 6.4 6.4 6.4 6.4 6.4 PIN 38 0 0 0 0 0

PIN NO.		10 0002								
PIN	NU.	STOP	REC	PLAY	CUE	REV				
PIN	1	4.9	0	5.0	5.0	5.0				
PIN	2	5.0	0	5.0	5.0	5.0				
PIN	3	3.2	0	3.3	3.3	3.3				
PIN	4	0	0	0	0	0				
PIN	5	0	0	0	0	0				
PIN	6	5.0	0	0	0	0				
PIN	7	2.4	2.4	2.5	2.6	2.6				
PIN	8	5.0	5.0	5.0	5.0	5.0				
PIN	9	0	0	0	0	0				
PIN	10	0	0	0	0	0				
PIN	11	4.5	4.6	4.6	4.6	0				
PIN	12	0	0	0	0	0				
PIN	13	0.1	0.1	0.1	0.1	0.1				
PIN	14	1.2	1.2	1.2	1.2	1.2				
PIN	15	6.6	6.6	6.6	6.6	6.6				
PIN	16	9.1	9.1	9.1	9.1	9.1				
PIN	17	0.7	-0.4	0.7	0.7	0				
PIN	18	3.5	3.5	3.5	3.5	3.5				
PIN	19	5.5	5.5	5.5	5.4	5.5				
PIN	20	4.8	4.8	4.8	4.8	4.8				
PIN	21	5.8	6.5	5.8	5.7	5.7				
PIN	22	0	0	0	0	0				
PIN	23	0	0	0	0	0				
PIN	24	5.4	5.3	5.3	0.3	5.3				
PIN	25	0.1	1.0	0.1	1.1	1.1				
PIN	26	0.9	0.9	0.9	1.0	1.0				

4-8

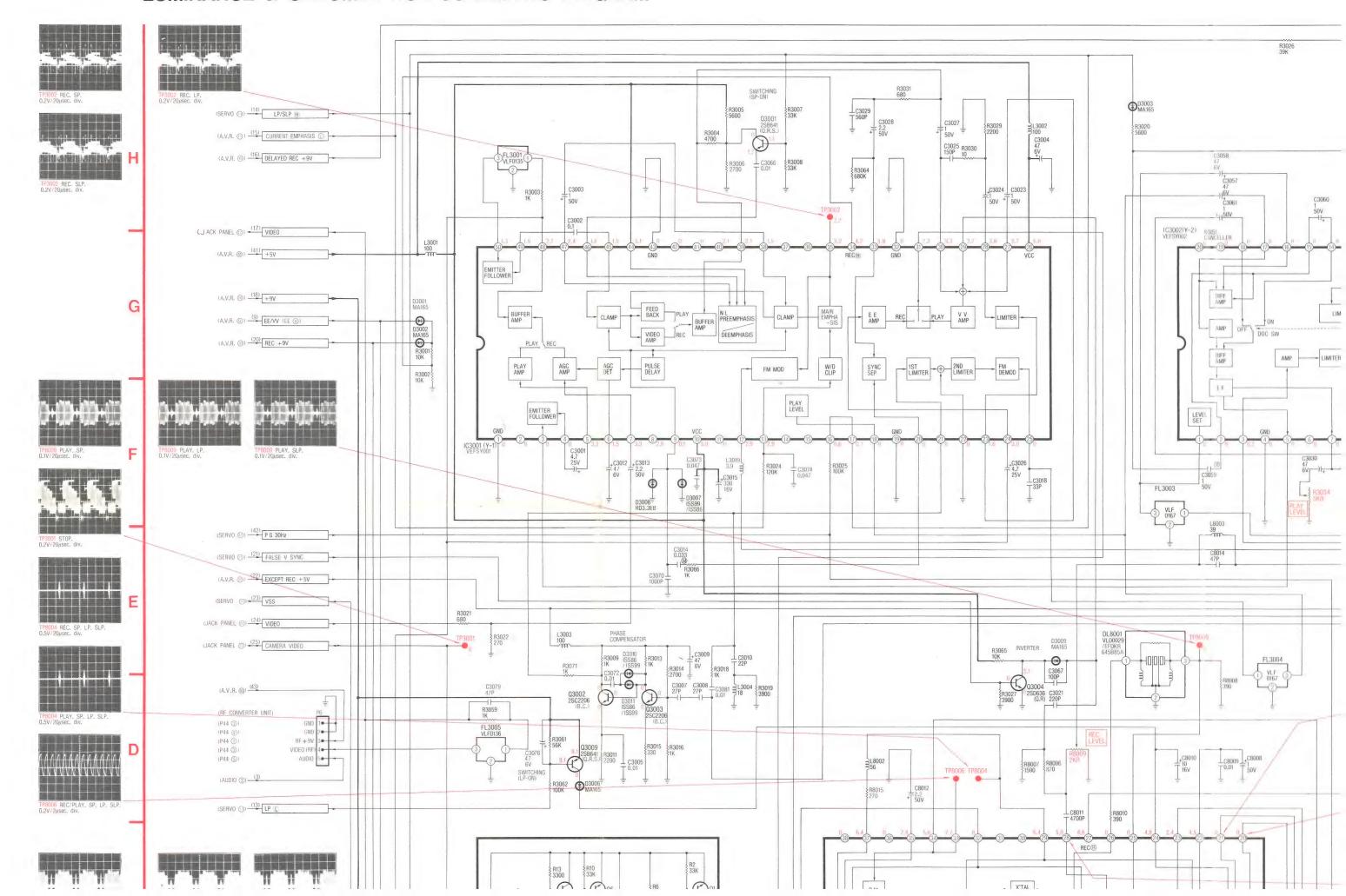


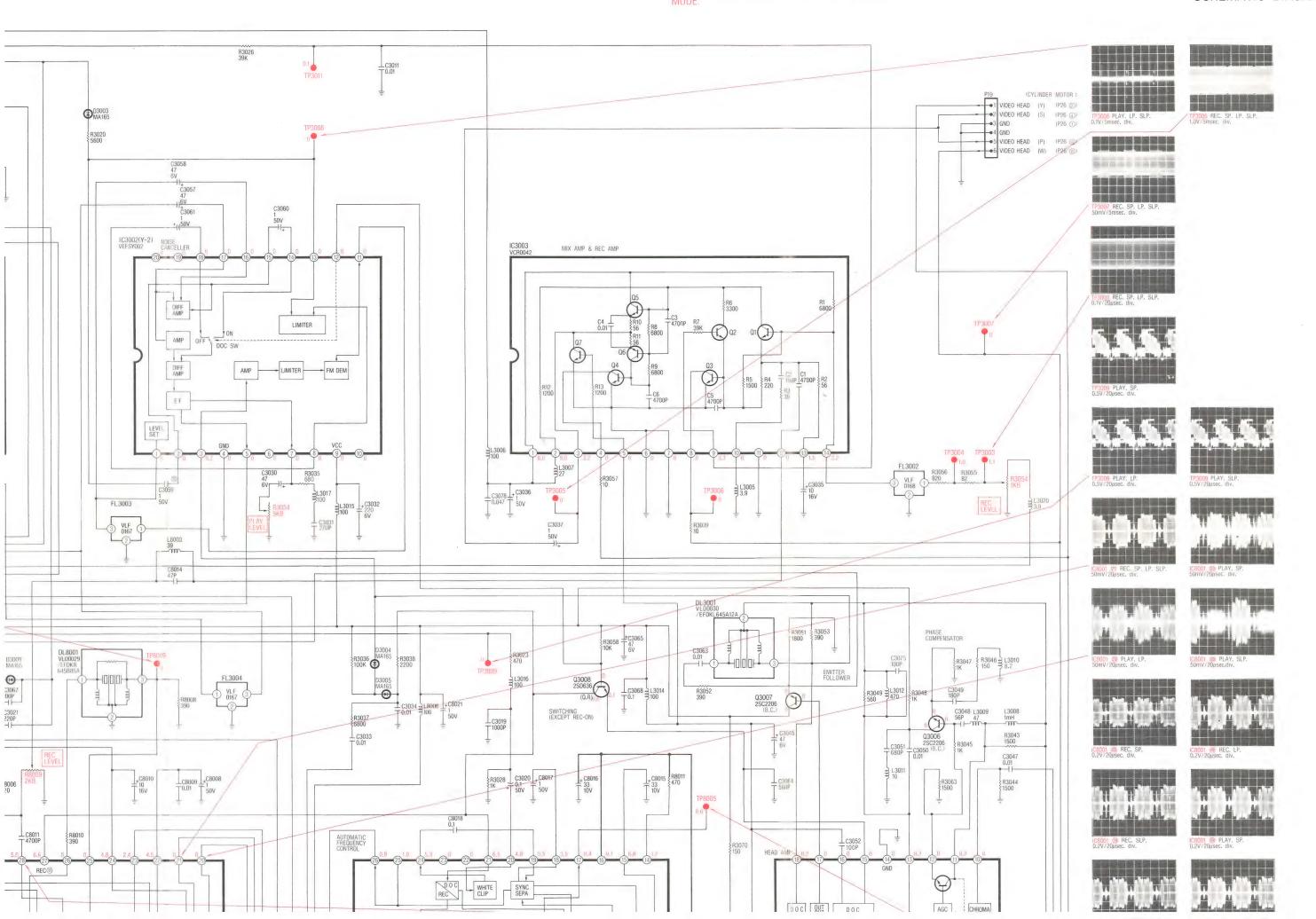
A.V.R. C.B.A.

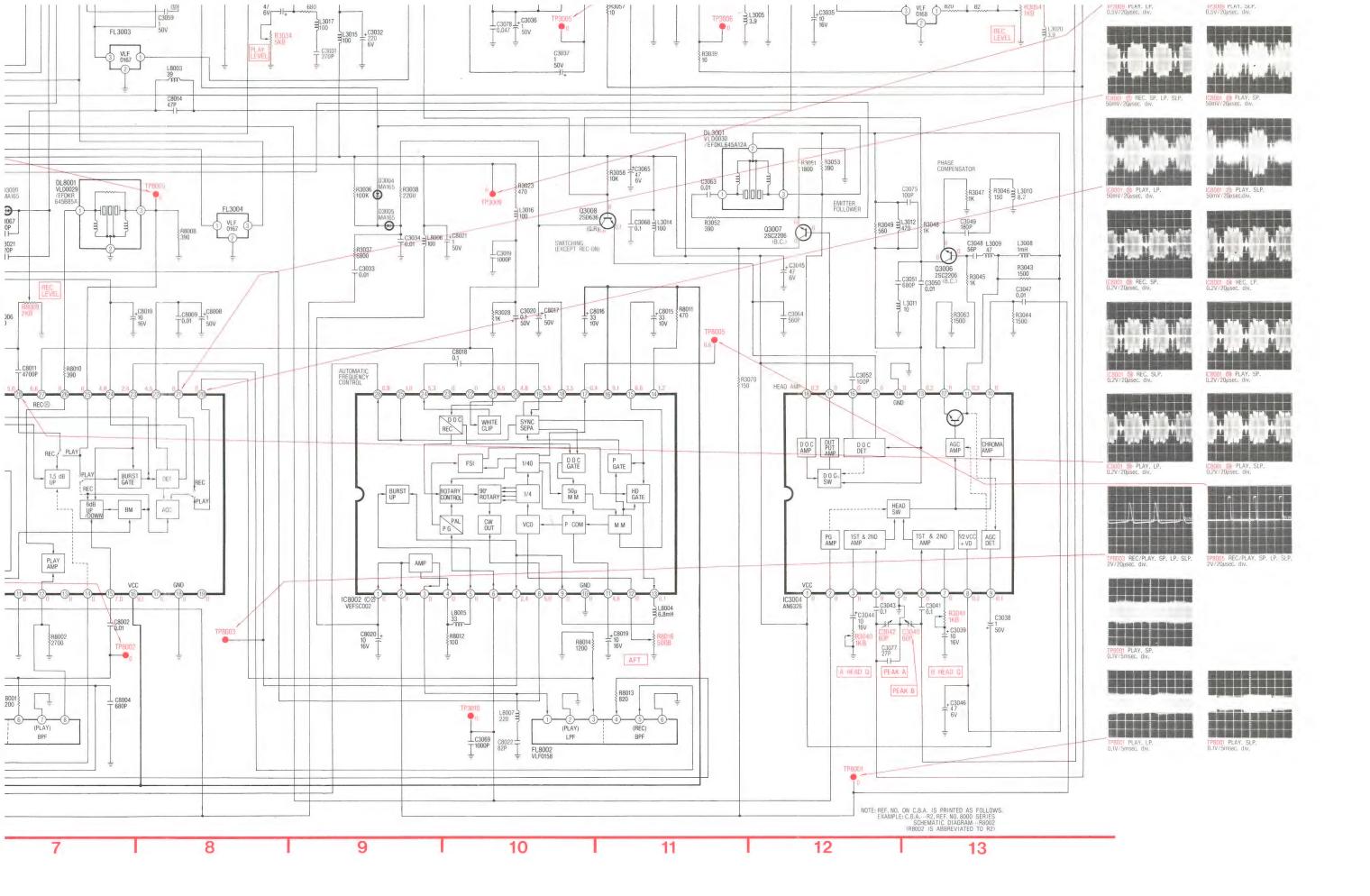
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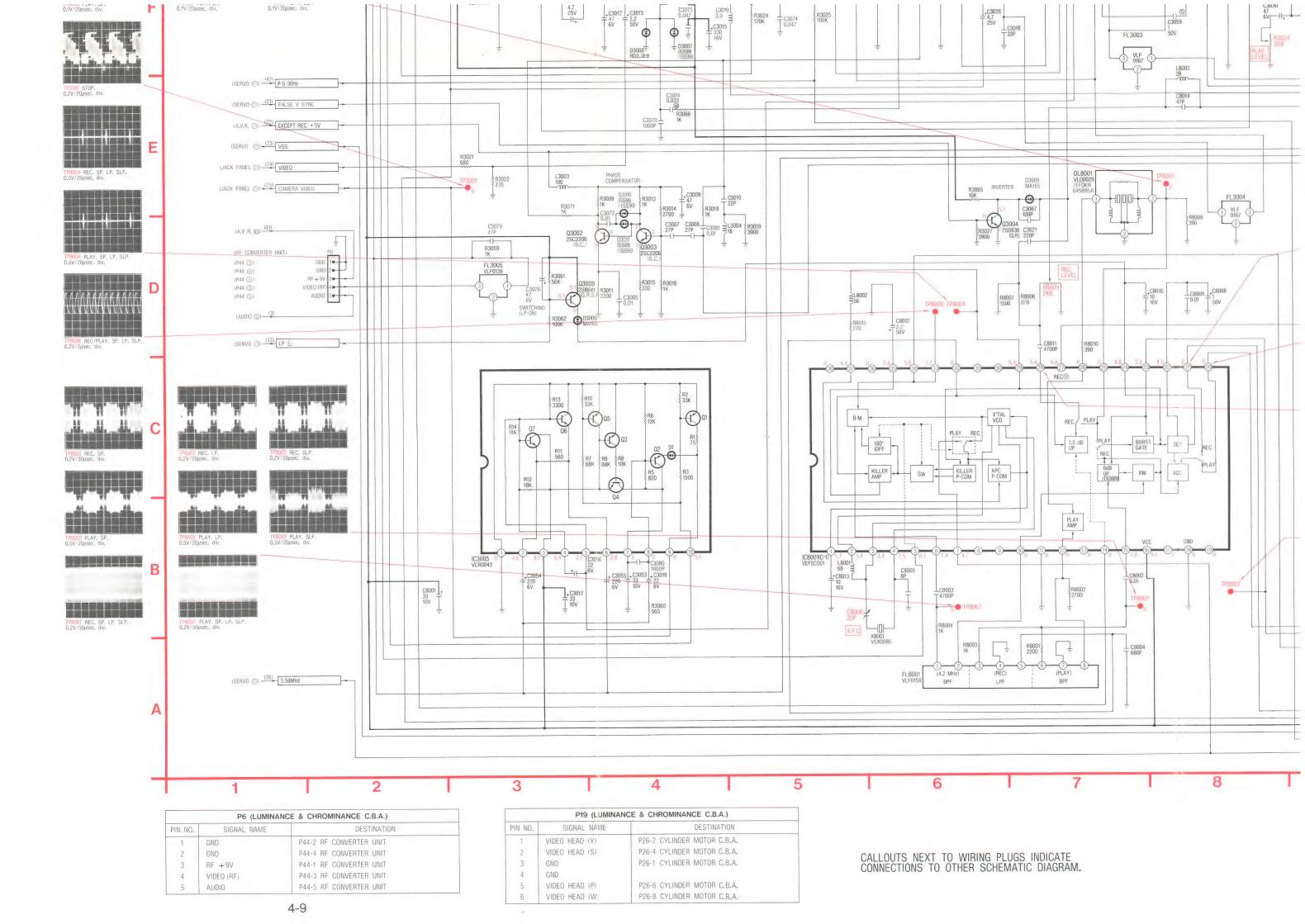
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LUMINANCE & CHROMINANCE SCHEMATIC DIAGRAM

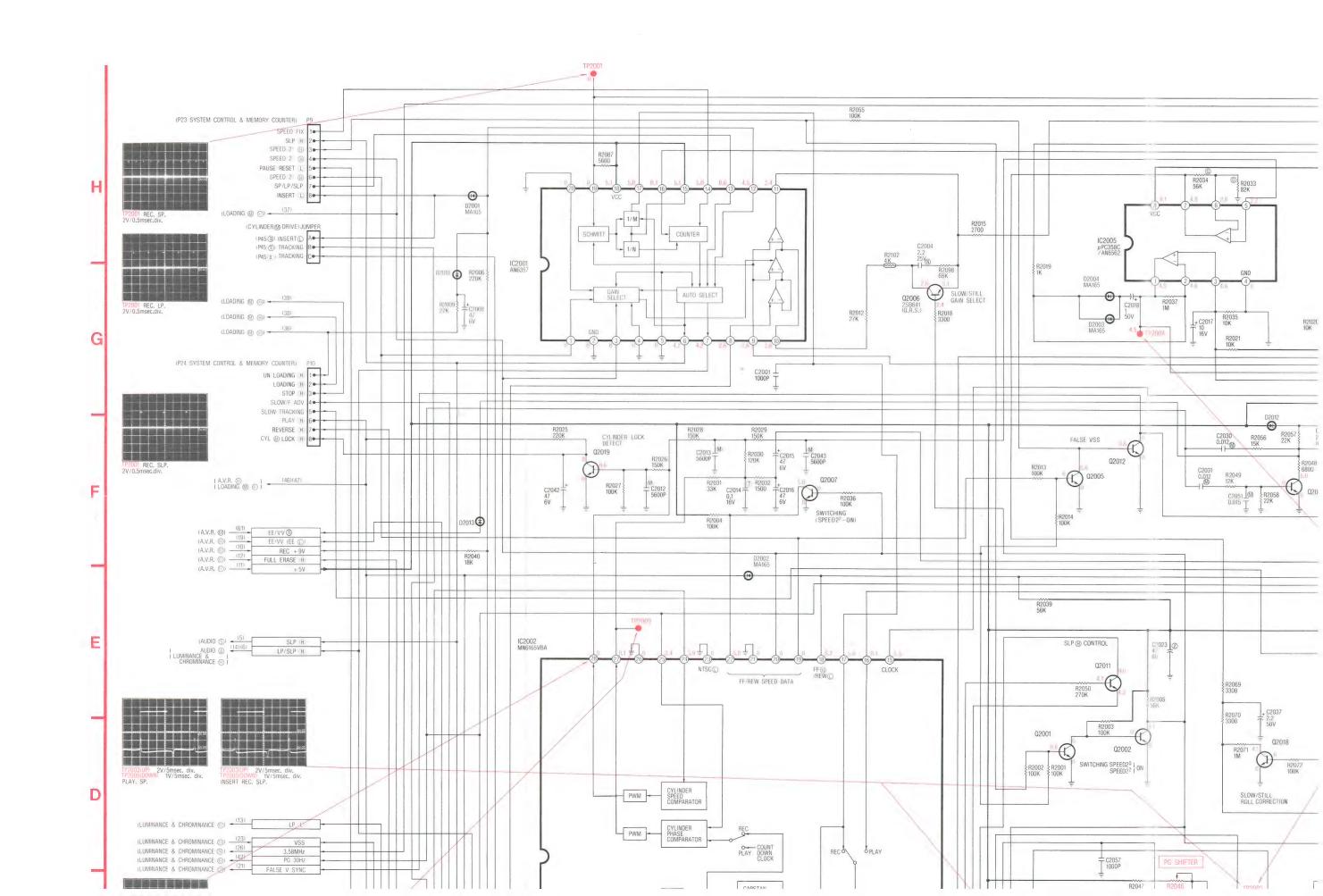


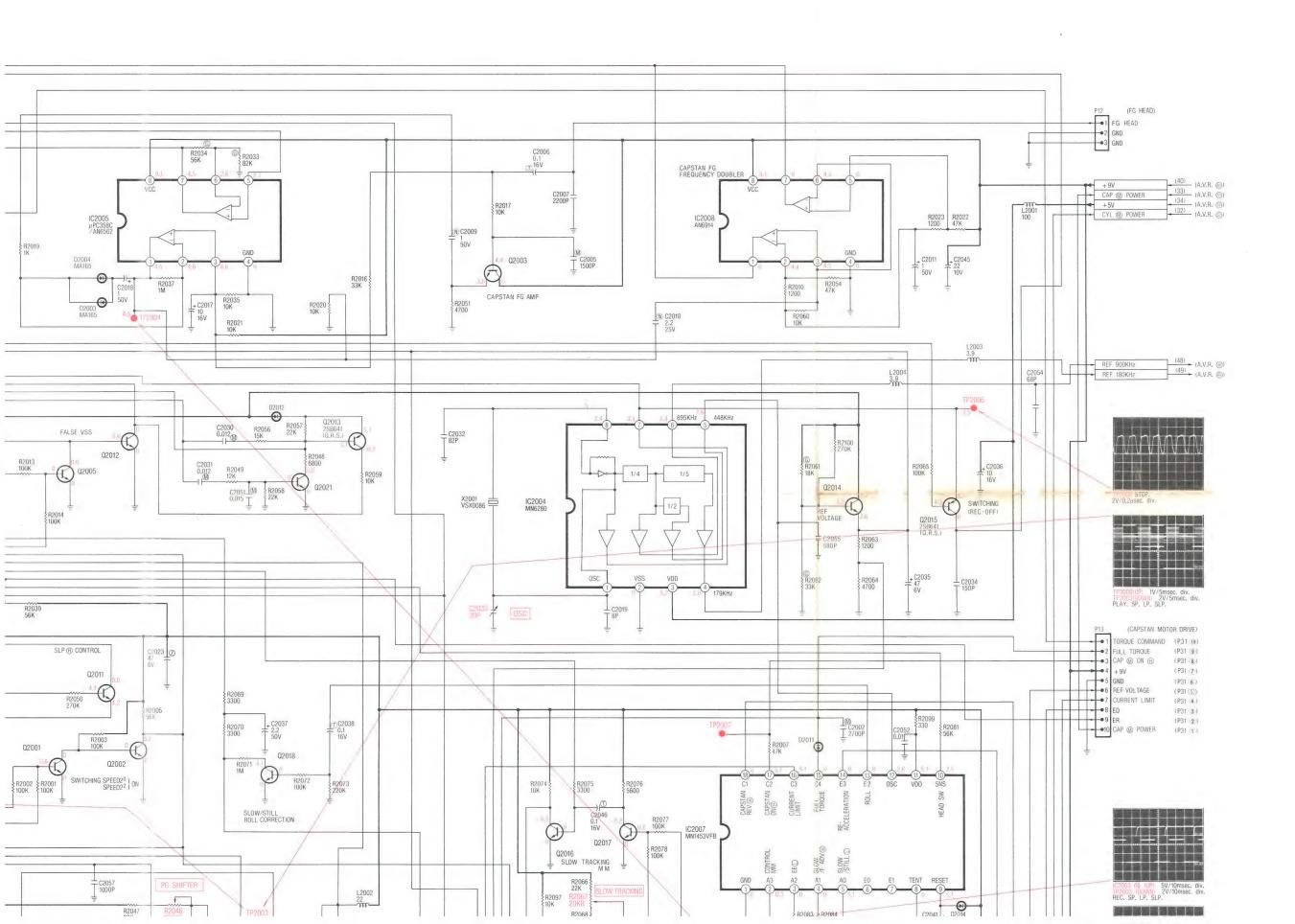


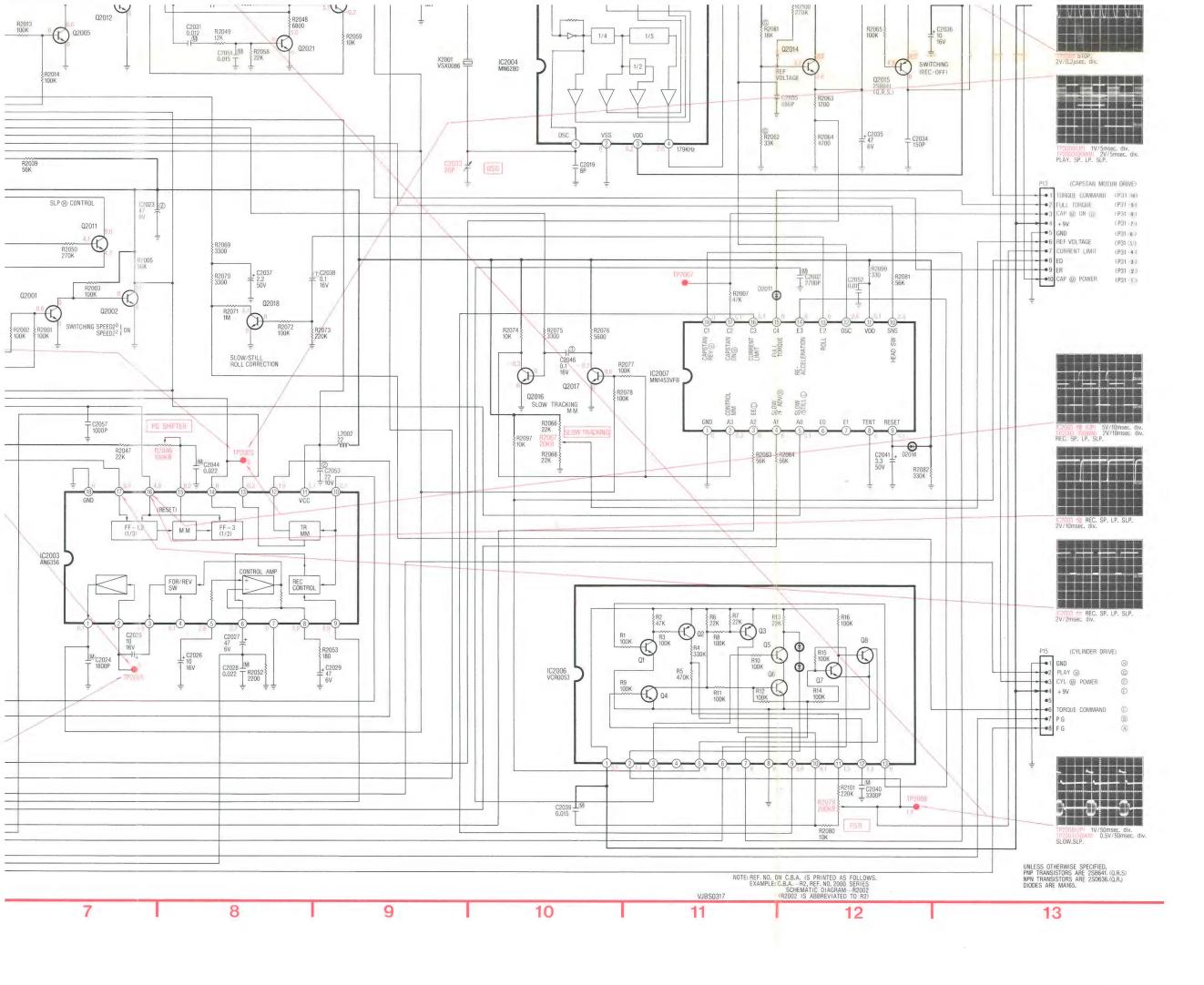


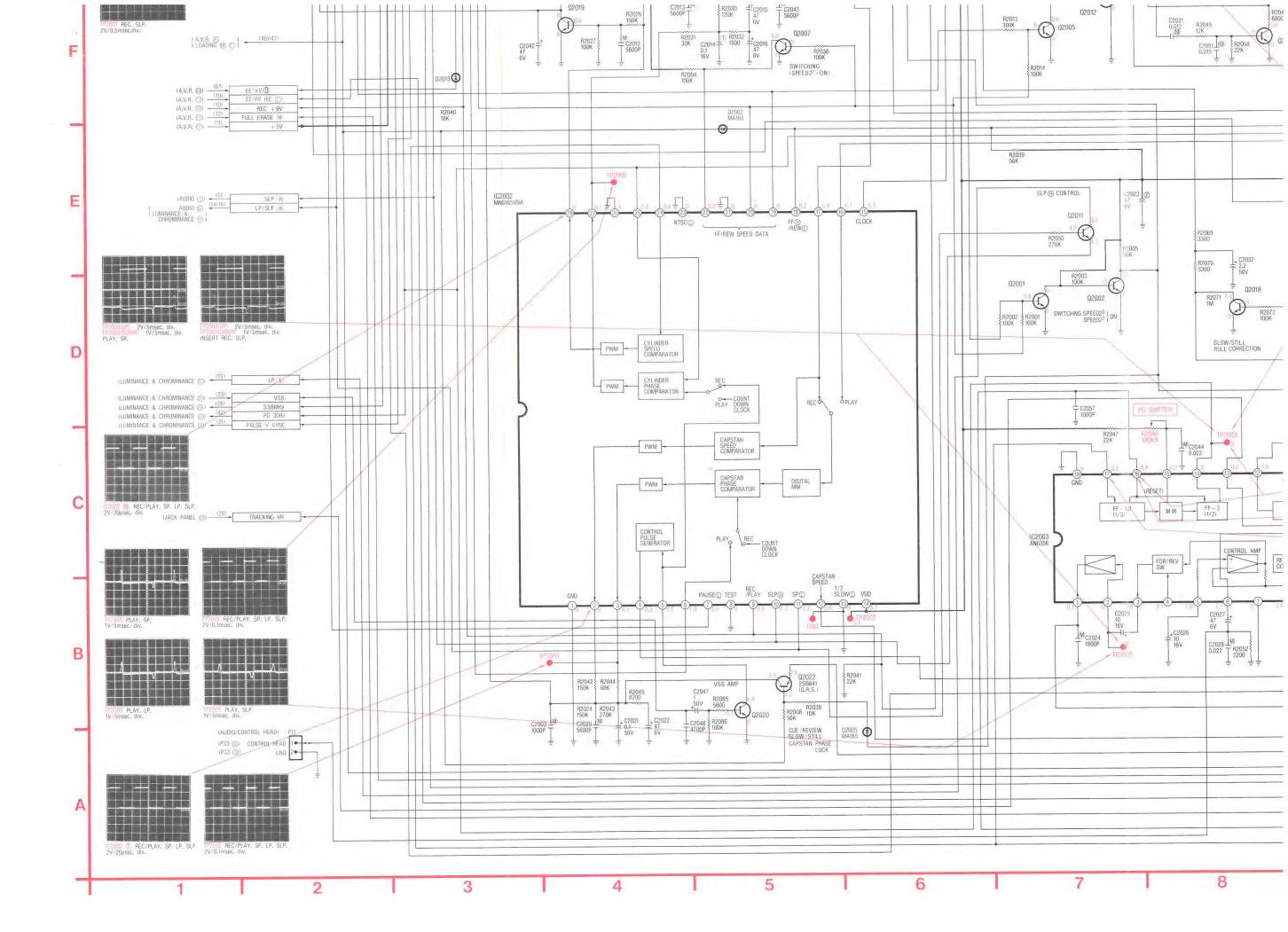


SERVO SCHEMATIC DIAGRAM









MAIN C.B.A. (VEPS0317A)

1 GND 2 +12V

1 CLOCK 2 2 SAFETY TAB 3 ANT/CH LOCK

9 VIDEO 10 + 12V 11 EXT +12V 12 GND

1 +12V 2 EXT +12V

6 + 12V

10 GND

1 SERIAL DATA AUDIO

4 CAMERA VIDEO

GND

4 VIDEO(RF) 5 AUDIO

1 AUDIO EE (H) AUDIO MUTING (H

7 + 12V

D

1 REF 900KHz REF 180KHz 3 SAFETY TAB (4 EE/VV(EE()) 5 FULL ERASE (6 REC ① 7 AUDIO REC (

8 DELAY REC

2 SLP (B) 4 SPEED 2² PAUSE RESET 6 SPEED 23 (7 SP/LP/SLF

POWER OFF

6 GND STAND BY 8 CAMERA PAUSE TALLY & CLOCK

1 SERIAL DATA 2 TC O SERIAL CAMERA IN 4 STAND BY CAMERA PAUSE TALLY & CLOCK 1 8 SAFETY TAB ON (ANT/CH LOCK (H)

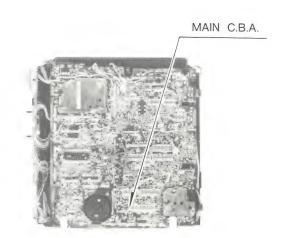
G

4 BATTERY CHARGE

SERIAL DATA

IMPORTANT SAFETY NOTICE: COMPONENTS IDENTIFIED BY THE SIGN A HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

THE VOLTAGE DRAWING ARE EXCEPT A.V.R. SECTION (ST(



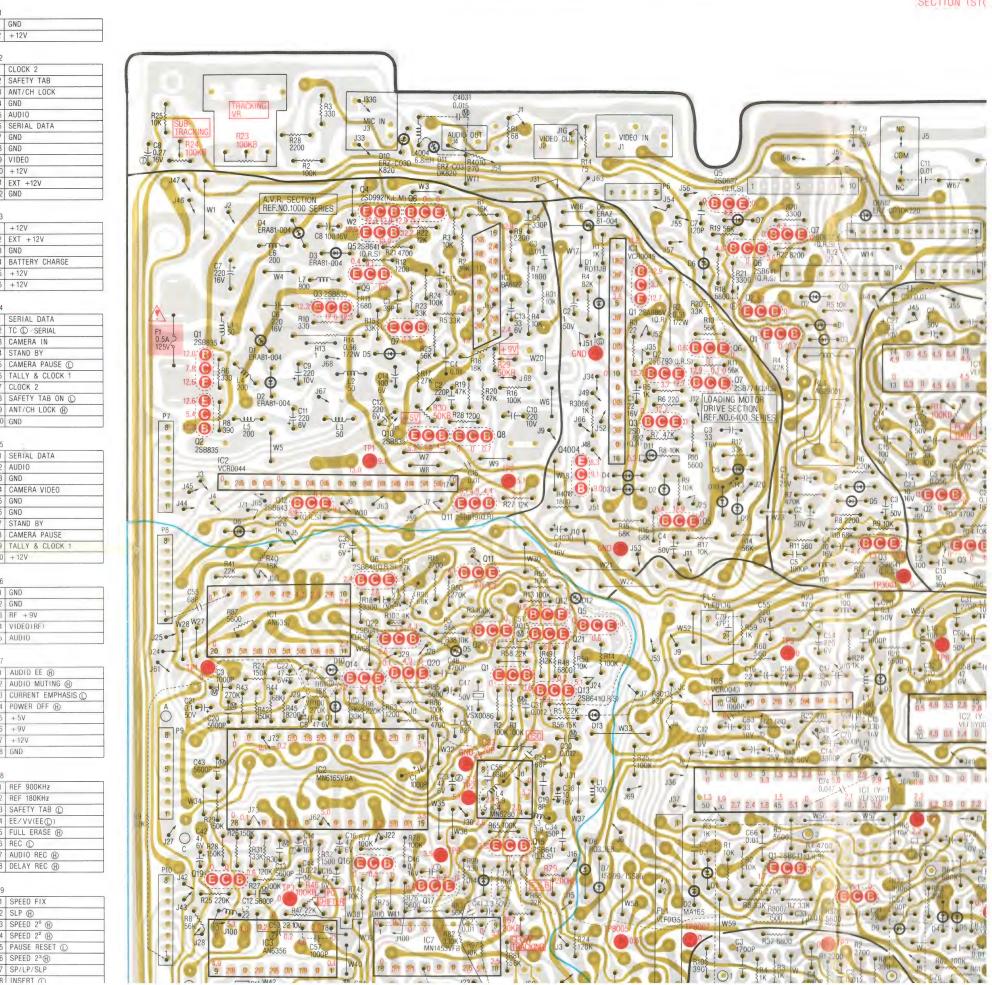
P9 (SERVO C.B.A.)										
PIN NO.	SIGNAL NAME	DESTINATION								
1	SPEED FIX	P23-1 SYSTEM CONTROL & MEMORY COUNTER C.B.A.								
2	SLP (H)	P23-2 SYSTEM CONTROL & MEMORY COUNTER C.B.A.								
3	SPEED 2º (H)	P23-3 SYSTEM CONTROL & MEMORY COUNTER C.B.A.								
4	SPEED 2 H	P23-4 SYSTEM CONTROL & MEMORY COUNTER C.B.A.								
5	PAUSE RESET (P23-5 SYSTEM CONTROL & MEMORY COUNTER C.B.A.								
6	SPEED 2 3 H	P23-6 SYSTEM CONTROL & MEMORY COUNTER C.B.A.								
7	SP/LP/SLP	P23-7 SYSTEM CONTROL & MEMORY COUNTER C.B.A.								
8	INSERT (P23-8 SYSTEM CONTROL & MEMORY COUNTER C.B.A.								

P10 (SERVO C.B.A.)											
PIN NO.	SIGNAL NAME	DESTINATION									
1	UNLOAD (H)	P24-1 SYSTEM CONTROL & MEMORY COUNTER C.B.A.									
2	LOAD (H)	P24-2 SYSTEM CONTROL & MEMORY COUNTER C.B.A.									
3	STOP (H)	P24-3 SYSTEM CONTROL & MEMORY COUNTER C.B.A.									
4	SLOW/FADV	P24-4 SYSTEM CONTROL & MEMORY COUNTER C.B.A.									
5	SLOW/TRACKING	P24-5 SYSTEM CONTROL & MEMORY COUNTER C.B.A.									
6	PLAY (H)	P24-6 SYSTEM CONTROL & MEMORY COUNTER C.B.A.									
7	REVERSE (H)	P24-7 SYSTEM CONTROL & MEMORY COUNTER C.B.A.									
8	CYL M LOCK H	P24-8 SYSTEM CONTROL & MEMORY COUNTER C.B.A.									

	P11	(SERVO C.B.A.)
PIN NO.	SIGNAL NAME	DESTINATION
1	CONTROL HEAD	P33-4 AUDIO/CONTROL HEAD C.B.A.
2	GND	P33-3 AUDIO/CONTROL HEAD C.B.A.

	P12	(SERVO C.B.A.)	
PIN NO.	SIGNAL NAME	DESTINATION	
1	FG HEAD	P32-2 FG HEAD C.B.A.	
2	GND	P32-1 FG HEAD C.B.A.	
3	GND		

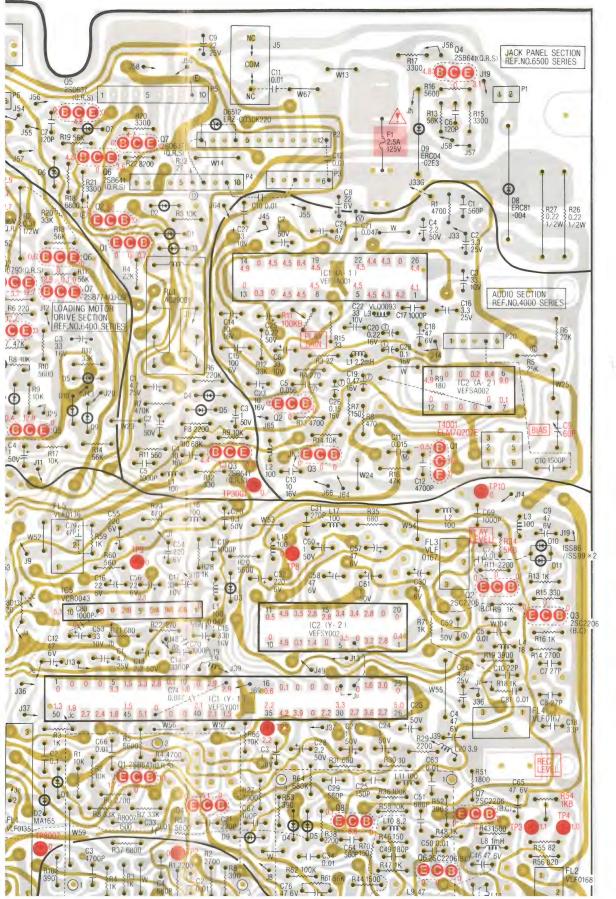
	P13	(SERVO C.B.A.)
PIN NO.	SIGNAL NAME	DESTINATION
1	TORQUE COMMAND	P31-10 CAPSTAN MOTOR DRIVE C.B.A.
2	FULL TORQUE	P31-9 CAPSTAN MOTOR DRIVE C.B.A.
3	CAP M ON H	P31-8 CAPSTAN MOTOR DRIVE C.B.A.
4	+9V	P31-7 CAPSTAN MOTOR DRIVE C.B.A.

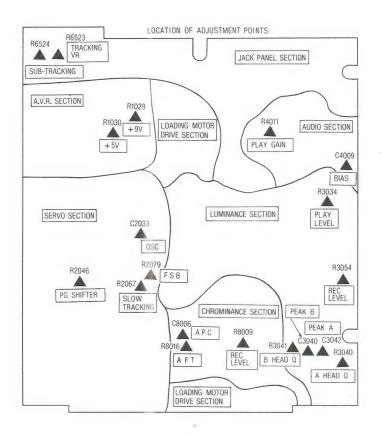


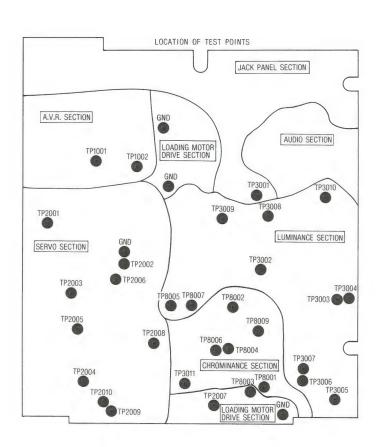
GN A HAVE NT FOR SAFETY. MPONENTS, USE

THE VOLTAGE MEASUREMENTS GIVEN IN THIS DRAWING ARE COLOR BAR SIGNAL IN SP-REC MODE

EXCEPT A.V.R. SECTION AND JACK PANEL SECTION (STOP MODE).







A.V.R.	C.B.A.
Q1	2-G
Q2	2-F
Q3	2-G
Q4	3-G
Q5	3-G
Q6	3-G
Q7	3-G
Q8	3-F
Q9	2-G
Q10	3-F
Q11	3-F
Q12	2-F

AUDIO C	.B.A.
Q1	6-F
Q2	6-F
Q3	6-F
Q4	4-F

JACK PANE	L C.B.A.
Q1	5-G
Q2	5-G
Q3	5-F
Q4	6-H
Q5	4-H
Q6	5-G
Q7	5-G

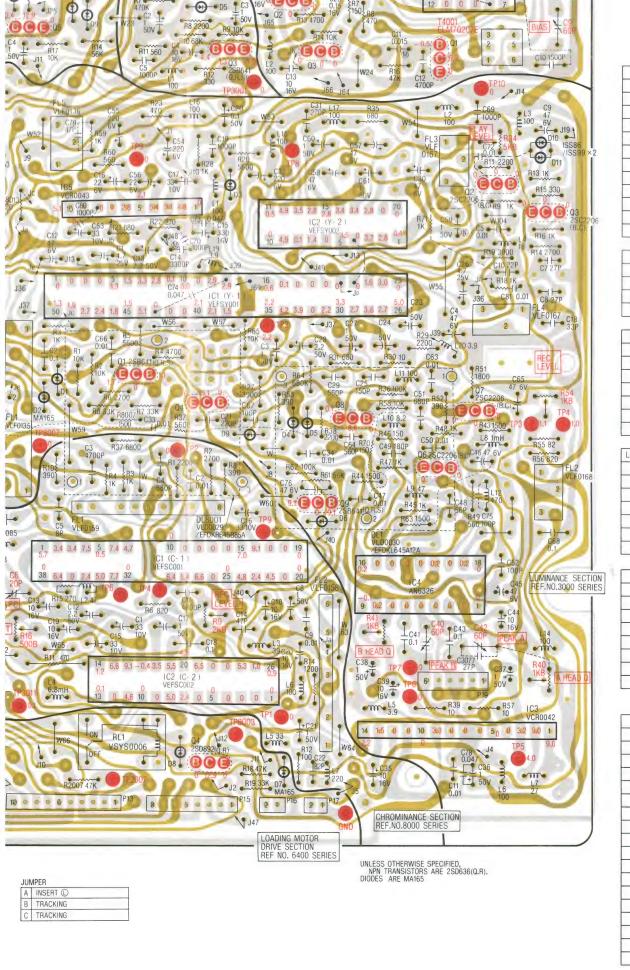
LOADING	MOTOR	C.B.A.
Q1		4-G
Q2		4-G

		STOP			REC			PLAY			CUE			REV			SL0W(1/4	4)		F.A	
	E	В	С	E	В	C	E	В	С	E	В	C	E	В	C	Е	В	C	E	В	C
02001	0	0	0.6	0	0.6	0	0	0.6	0	0	0.5	0	0	0.6	0	0	0	0.6	0	0	0.6
Q2002	0	0.6	0	0	0	5.1	0	0	5.0	0	0	5.0	0	0	5.0	0	0.6	0	0	0.6	0
02003	3.7	4.3	9.1	3.8	4.4	0	3.7	4.4	9.1	3.7	4.4	9.1	3.7	4.3	9.1	3.7	4.4	9.1	3.7	4.4	9.1
Q2005	0	0	0	0	0	0.6	0	0	0.6	0	0.6	0	0	0.6	0	0	0	0	0	0	0
02006	0.9	1.5	1.5	5.1	2.4	2.6	5.0	2.4	2.5	5.0	2.3	2.5	5.0	2.3	2.6	1.5	2.2	2.2	1.5	2.2	2.2
02007	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0
02011	0	0.1	8.9	4.2	4.1	9.0	4.1	4.1	8.9	4.1	4.1	8.9	4.1	4.0	8.9	4.1	4.0	8.9	4.1	4.0	8.9
02012	0	0	0	0	0.6	0	0	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0
02013	5.1	5.1	0	5.1	5.1	-0.2	5.0	5.0	-0.2	5.0	5.0	-0.2	5.0	5.0	-0.2	5.0	5.0	-0.2	5.0	5.0	-0.2
Q2014	0	0.1	3.4	2.6	3.2	5.1	2.6	3.2	5.0	2.5	3.2	5.0	2.6	3.2	5.0	2.6	3.2	5.0	2.6	3.2	5.0
Q2015	3.5	4.1	4.7	3.5	4.9	0	3.4	4.1	4.7	3.5	4.0	4.7	3.5	4.1	4.7	3.4	4.1	4.7	3.4	4.0	4.7
Q2016	0	0.6	0	0	0	-0.3	0	0	-0.3	0	0	3.7	0	0	3.6	0	0.5	-0.3	0	0.6	0
Q2017	0	0	5.0	0	0.6	-0.2	0	0.2	0.2	0	0.5	0.8	0	0.5	1.0	0	0	4.5	0	0	4.8
Q2018	0	0	2.1	0	0	4.1	0	0	4.1	0	0	4.1	0	0	4.1	0	0	3.2	0	0	4.0
Q2019	0	0	0	0	0.6	0	0	0.5	0	0	0.5	0	0	0.6	0	0	0.5	0	0	0.5	0
Q2020	0	0	5.0	0	-0.1	4.9	0	5.1	4.8	0	-0.4	4.7	0	-0.4	4.7	-0.4	0	4.7	0	0.4	4.1
Q2021	0	0	5.1	0	0	5.0	0	0	5.0	0	0	4.9	0	0	4.9	0	0	5.0	0	0	4.9
02022	2.6	1.9	2.6	2.6	4.3	2.3	2.6	4.3	2.3	2.6	4.3	2.2	2.6	4.3	2.1	2.6	1.9	2.6	2.6	2.0	2.0

PIN NO.				IC 2001			
PIN NU.	STOP	REC	PLAY	CUE	REV	SLOW(1/4)	F.A
PIN 1	0	0	0	5.0	5.0	0	0
PIN 2	0	0	0	0	0	0	0
PIN 3	0	0	0	0	0	0	0
PIN 4	0	0	0	0	0	0	0
PIN 5	0	0	0	0	0	0	0
PIN 6	0	4.2	4.1	4.1	4.0	4.1	4.1
PIN 7	0.1	4.2	4.0	4.2	4.1	4.1	4.1
PIN 8	1.2	2.6	2.6	2.6	2.6	1.3	2.6
PIN 9	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PIN 10	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PIN 11	1.5	2.4	2.4	2.4	2.3	2.2	2.3
PIN 12	0.7	4.5	0.6	0.6	0.6	0	0.6
PIN 13	0.5	0.6	0.6	0.6	0.6	0.6	0.5
PIN 14	5.0	5.0	5.0	5.0	5.0	0	5.0
PIN 15	5.0	5.1	5.0	5.0	5.0	5.0	5.0
PIN 16	0	0.1	0	-0.1	-0.1	0	0
PIN 17	0	5.0	4.9	4.9	0	0	4.9
PIN 18	5.0	5.1	5.0	5.0	5.0	5.0	5.0
PIN 19	3.7	0	0	0	0	2.1	0
PIN 20	0	0	0	0	0	0	0

PIN NO.				IC 2003	3		
PIN NU.	STOP	REC	PLAY	CUE	REV	SLOW(1/4)	F.A
PIN 1	0	0.1	0	-0.1	-0.1	0	0
PIN 2	0.4	0	0	-0.6	-0.6	0.3	0.1
PIN 3	1.1	1.9	1,1	1.3	1.2	1.1	1.2
PIN 4	0.1	0.1	0.2	*	0.2	0.1	0.3
PIN 5	2.5	2.6	2.6	2.5	2.6	2.5	2.6
PIN 6	2.6	2.7	2.6	2.5	2.5	2.6	2.6
PIN 7	0	0	0	0	0	0	0
PIN 8	2.6	2.8	2.6	2.6	2.6	2.6	2.6
PIN 9	0	4.9	0	0	0	0	0
PIN 10	0	0.1	0	0	0	0	0
PIN 11	2.8	5.1	5.0	5.0	5.0	5.0	0
PIN 12	1.9	1.9	-0.1	-0.1	1.8	-0.1	1.9
PIN 13	0.1	0.2	0.1	-0.2	0.1	0.1	0.1
PIN 14	5.0	0	0	0	0	0	0
PIN 15	4.8	0.2	0.2	0.2	0.2	0.2	0.2
PIN 16	5.0	4.8	4.8	4.8	4.8	4.8	4.8
PIN 17	5.0	3.9	3.8	3.8	3.8	3.8	3.8
PIN 18	0	0	0	0	0	0	0

PIN 1	NO.				IC 2007			
PIN	VU.	STOP	REC	PLAY	CUE	REV	SL0W(1/4)	F.A
PIN	1	0	0	0	0	0	0	0
PIN	2	0	-0.3	0.3	3.7	3.6	-0.3	0
PIN	3	0	0	5.0	5.0	4.9	5.0	5.0
PIN	4	0	0	0	0	0	-0.1	0
PIN	5	0	5.1	5.0	0	5.0	0	0
PIN	6	*	*	*	*	*	*	*
PIN	7	*	*	*	*	*	*	*
PIN	8	0	0	0	0	0	0	0
PIN	9	5.0	5.1	5.0	5.0	5.0	5.0	5.0
PIN	10	0	2.5	0	0	0	0	0
PIN	11	5.0	5.1	0	5.0	5.0	5.0	5.0
PIN	12	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PIN	13	0	0	0	0	0	-0.2	0
PIN	14	0	0	0	0	0	0.1	4.3
PIN	15	0	0	0	0	0	3.7	4.7
PIN	16	5.0	5.1	5.0	2.8	5.0	1.7	0
PIN	17	0	5.1	5.0	0	5.0	4.9	5.0
PIN	18	0	0	0	0	0	0.6	0



A.V.R.	C.B.A.
Q1	2-G
Q2	2-F
Q3	2-G
Q4	3-G
Q5	3-G
Q6	3-G
Q7	3-G
Q8	3-F
Q9	2-G
Q10	3-F
Q11	3-F
Q12	2-F

AUDIO (C.B.A.
Q1	6-F
Q2	6-F
Q3	6-F
Q4	4-F

JACK PANI	EL C.B.A.
Q1	5-G
Q2	5-G
Q3	5-F
Q4	6-H
Q5	4-H
Q6	5-G
Q7	5-G

LOADING MO	OTOR C.B.A.
Q1	4-G
Q2	4-G
Q3	4-F
Q4	5-B
Q5	4-F
Q6	4-G
Q7	4-G

LUMINAN	CE C.B.A.
Q1	5-D
Q2	7-E
Q3	7-E
Q4	5-D
Q6	6-C
Q7	7-D
Q8	6-D
Q9	6-C

SERVO C	.B.A.
Q1	3-E
Q2	3-E
Q3	2-B
Q5	4 - E
Q6	2-E
Q7	4-B
Q11	3-F
Q12	3-E
Q13	3-E
Q14	2-E
Q15	3-D
Q16	2-D
Q17	3-D
Q18	2-C
Q19	2-D
Q20	3-E
Q21	3-E
Q22	3-E

		STOP			REC			PLAY			CUE			REV			SLOW(1/	4)		F.A	
	Е	В	С	Е	В	C	E	В	C	E	В	C	E	В	C	E	В	C	E	В	C
Q2001	0	0	0.6	0	0.6	0	0	0.6	0	0	0.5	0	0	0.6	0	0	0	0.6	0	0	0.6
Q2002	0	0.6	0	0	0	5.1	0	0	5.0	0	0	5.0	0	0	5.0	0	0.6	0	0	0.6	0
Q2003	3.7	4.3	9.1	3.8	4.4	0	3.7	4.4	9.1	3.7	4.4	9.1	3.7	4.3	9.1	3.7	4.4	9.1	3.7	4.4	9.1
Q2005	0	0	0	0	0	0.6	0	0	0.6	0	0.6	0	0	0.6	0	0	0	0	0	0	0
Q2006	0.9	1.5	1.5	5.1	2.4	2.6	5.0	2.4	2.5	5.0	2.3	2.5	5.0	2.3	2.6	1.5	2.2	2.2	1.5	2.2	2.2
Q2007	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0
Q2011	0	0.1	8.9	4.2	4.1	9.0	4.1	4.1	8.9	4.1	4.1	8.9	4.1	4.0	8.9	4.1	4.0	8.9	4.1	4.0	8.9
Q2012	0	0	0	0	0.6	0	0	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0
Q2013	5.1	5.1	0	5.1	5.1	-0.2	5.0	5.0	-0.2	5.0	5.0	-0.2	5.0	5.0	-0.2	5.0	5.0	-0.2	5.0	5.0	-0.2
Q2014	0	0.1	3.4	2.6	3.2	5.1	2.6	3.2	5.0	2.5	3.2	5.0	2.6	3.2	5.0	2.6	3.2	5.0	2.6	3.2	5.0
Q2015	3.5	4.1	4.7	3.5	4.9	0	3.4	4.1	4.7	3.5	4.0	4.7	3.5	4.1	4.7	3.4	4.1	4.7	3.4	4.0	4.7
Q2016	0	0.6	0	0	0	-0.3	0	0	-0.3	0	0	3.7	0	0	3.6	0	0.5	-0.3	0	0.6	0
Q2017	0	0	5.0	0	0.6	-0.2	0	0.2	0.2	0	0.5	0.8	0	0.5	1.0	0	0	4.5	0	0	4.8
Q2018	0	0	2.1	0	0	4.1	0	0	4.1	0	0	4.1	0	0	4.1	0	0	3.2	0	0	4.0
Q2019	0	0	0	0	0.6	0	0	0.5	0	0	0.5	0	0	0.6	0	0	0.5	0	0	0.5	0
02020	0	0	5.0	0	-0.1	4.9	0	5.1	4.8	0	-0.4	4.7	0	-0.4	4.7	-0.4	0	4.7	0	0.4	4.1
Q2021	0	0	5.1	0	0	5.0	0	0	5.0	0	0	4.9	0	0	4.9	0	0	5.0	0	0	4.9
Q2022	2.6	1.9	2.6	2.6	4.3	2.3	2.6	4.3	2.3	2.6	4.3	2.2	2.6	4.3	2.1	2.6	1.9	2.6	2.6	2.0	2.6

PIN NO.				IC 2001			
PIN NU.	STOP	REC	PLAY	CUE	REV	SLOW(1/4)	F.A
PIN 1	0	0	0	5.0	5.0	0	0
PIN 2	0	0	0	0	0	0	0
PIN 3	0	0	0	0	0	0	0
PIN 4	0	0	0	0	0	0	0
PIN 5	0	0	0	0	0	0	0
PIN 6	0	4.2	4.1	4.1	4.0	4.1	4.1
PIN 7	0.1	4.2	4.0	4.2	4.1	4.1	4.1
PIN 8	1.2	2.6	2.6	2.6	2.6	1.3	2.6
PIN 9	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PIN 10	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PIN 11	1.5	2.4	2.4	2.4	2.3	2.2	2.3
PIN 12	0.7	4.5	0.6	0.6	0.6	0	0.6
PIN 13	0.5	0.6	0.6	0.6	0.6	0.6	0.5
PIN 14	5.0	5.0	5.0	5.0	5.0	0	5.0
PIN 15	5.0	5.1	5.0	5.0	5.0	5.0	5.0
PIN 16	0	0.1	0	-0.1	-0.1	0	0
PIN 17	0	5.0	4.9	4.9	0	0	4.9
PIN 18	5.0	5.1	5.0	5.0	5.0	5.0	5.0
PIN 19	3.7	0	0	0	0	2.1	0
PIN 20	0	0	0	0	0	0	0

PIN 16	0	0.1	0	-0.1	-0.1	0	0
PIN 17	0	5.0	4.9	4.9	0	0	4.9
PIN 18	5.0	5.1	5.0	5.0	5.0	5.0	5.0
PIN 19	3.7	0	0	0	0	2.1	0
PIN 20	0	0	0	0	0	0	0
PIN NO.				IC 2002			
i iiv ivo.	STOP	REC	PLAY	CUE.	REV	SLOW(1/4)	F.A
PIN 1	0	0	0	0	0	0	0
PIN 2	0.1	0	0	0	0	-0.2	0
PIN 3	0	-0.1	-0.1	0	-0.1	-0.1	-0.1
PIN 4	0	-0.2	0	0	0	0	0
PIN 5	4.8	5.0	4.8	4.7	4.7	4.7	4.8
PIN 6	1.7	1.8	-0.1	1.7	1.7	1.7	-0.1
PIN 7	5.0	5.0	0	0	0	0	0
PIN 8	0	0	0	0	0	0	0
PIN 9	0	5.0	0.6	0.6	0.6	0.6	0.6
PIN 10	0	4.2	4.1	4.1	4.1	4.1	4.1
PIN 11	0.1	4.2	4.1	4.1	4.1	4.1	4.1
PIN 12	2.1	2.0	2.0	2.0	2.0	2.1	2.0
PIN 13	0	0	0	0	0	0	0
PIN 14	5.0	5.1	5.1	5.0	5.0	5.0	5.0
PIN 15	3.4	3.5	3.5	3.4	3.5	3.5	3.5
PIN 16	0	0.1	0	-0.1	-0.2	0	0
PIN 17	0	5.0	4.9	4.9	4.9	0	4.9
PIN 18	0.1	0.2	0.1	0.1	4.7	0.1	0.1
PIN 19	0	0	0	5.0	5.0	0	0
PIN 20	0	0	0	0	0	0	0
PIN 21	0	0	0	0	0	0	0

PIN I	0	0	U	U	0	U	0
PIN 2	0.1	0	0	0	0	-0.2	0
PIN 3	0	-0.1	-0.1	0	-0.1	-0.1	-0.1
PIN 4	0	-0.2	0	0	0	0	0
PIN 5	4.8	5.0	4.8	4.7	4.7	4.7	4.8
PIN 6	1.7	1.8	-0.1	1.7	1.7	1.7	-0.1
PIN 7	5.0	5.0	0	0	0	0	0
PIN 8	0	0	0	0	0	0	0
PIN 9	0	5.0	0.6	0.6	0.6	0.6	0.6
PIN 10	0	4.2	4.1	4.1	4.1	4.1	4.1
PIN 11	0.1	4.2	4.1	4.1	4.1	4.1	4.1
PIN 12	2.1	2.0	2.0	2.0	2.0	2.1	2.0
PIN 13	0	0	0	0	0	0	0
PIN 14	5.0	5.1	5.1	5.0	5.0	5.0	5.0
PIN 15	3.4	3.5	3.5	3.4	3.5	3.5	3.5
PIN 16	0	0.1	0	-0.1	-0.2	0	0
PIN 17	0	5.0	4.9	4.9	4.9	0	4.9
PIN 18	0.1	0.2	0.1	0.1	4.7	0.1	0.1
PIN 19	0	0	0	5.0	5.0	0	0
PIN 20	0	0	0	0	0	0	0
PIN 21	0	0	0	0	0	0	0
PIN 22	5.0	5.0	5.0	5.0	5.0	5.0	5.0
PIN 23	0	0	0	0	0	0	0
PIN 24	5.0	3.9	3.8	3.8	3.8	3.8	3.8
PIN 25	5.0	2.4	2.5	0	2.5	2.5	2.5
PIN 26	0	0	0	0	0	0	0
PIN 27	0	0.1	0	0	0	0	0
PIN 28	0.1	0	0	0	0	0	0

DIM NO				IC 2003			
PIN NO.	STOP	REC	PLAY	CUE	REV	SL0W(1/4)	F.A
PIN 1	0	0.1	0	-0.1	-0.1	0	0
PIN 2	0.4	0	0	-0.6	-0.6	0.3	0.1
PIN 3	1.1	1.9	1.1	1.3	1.2	1.1	1.2
PIN 4	0.1	0.1	0.2	*	0.2	0.1	0.3
PIN 5	2.5	2.6	2.6	2.5	2.6	2.5	2.6
PIN 6	2.6	2.7	2.6	2.5	2.5	2.6	2.6
PIN 7	0	0	0	0	0	0	0
PIN 8	2.6	2.8	2.6	2.6	2.6	2.6	2.6
PIN 9	0	4.9	0	0	0	0	0
PIN 10	0	0.1	0	0	0	0	0
PIN 11	2.8	5.1	5.0	5.0	5.0	5.0	0
PIN 12	1.9	1.9	-0.1	-0.1	1.8	-0.1	1.9
PIN 13	0.1	0.2	0.1	-0.2	0.1	0.1	0.1
PIN 14	5.0	0	0	0	0	0	0
PIN 15	4.8	0.2	0.2	0.2	0.2	0.2	0.2
PIN 16	5.0	4.8	4.8	4.8	4.8	4.8	4.8
PIN 17	5.0	3.9	3.8	3.8	3.8	3.8	3.8
PIN 18	0	0	0	0	0	0	0

PIN NO.				IC 2004			
PIN NU.	STOP	REC	PLAY	CUE	REV	SL0W(1/4)	F.A
PIN 1	*	*	*	*	*	*	*
PIN 2	0	0	0	0	0	0	0
PIN 3	5.1	5.2	5.1	5.1	5.2	5.2	5.1
PIN 4	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PIN 5	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PIN 6	2.4	2.4	2.4	2.4	2.4	2.4	2.4
PIN 7	3.5	3.5	3.5	3.5	3.5	3.5	3.5
PIN 8	2.4	2.4	2.4	2.4	2.4	2.4	2.4
PIN NO.	STOP	REC	PLAY	CUE	REV	SL0W(1/4)	F.A
PIN 1	4.5	4.5	4.5	4.5	4.5	4.5	4.5
PIN 2	4.5	4.6	4.5	4.6	4.6	4.5	4.6
PIN 3	4.5	4.6	4.5	4.6	4.6	4.6	4.6
PIN 4	0	0	0	0	0	0	0
PIN 5	1.3	2.7	2.7	2.7	2.7	2.6	2.7
PIN 6	1.3	2.6	2.7	2.6	2.7	2.7	2.7
PIN 7	2.2	4.5	4.5	4.5	4.5	4.5	4.5
PIN 8	9.1	9.1	9.1	9.1	9.1	9.1	9.1
				IC 2006			
PIN NO.	STOP	REC	PLAY	CUE	REV	SL0W(1/4)	F.A
PIN 1	9.1	9.1	9.1	9.1	9.1	9.1	9.1
DIM 2	1.2	1.4	1.4	1.4	1.4	100	0

PIN NO.				IC 2006			
PIN NU.	STOP	REC	PLAY	CUE	REV	SL0W(1/4)	F.A
PIN 1	9.1	9.1	9.1	9.1	9.1	9.1	9.1
PIN 2	1.3	1.4	1.4	1.4	1.4	0.3	0
PIN 3	0	0	0	0	0	3.6	4.7
PIN 4	0	0	0	0	0	0	0
PIN 5	0	0	0	0	5.0	-0.4	0
PIN 6	0	0	0	0	5.0	0	0
PIN 7	0	0	0	0	0	0.6	0
PIN 8	0	0	0	0	0	0	0
PIN 9	5.0	5.0	5.0	5.0	5.0	-0.1	0
PIN 10	9.1	9.1	9.1	9.1	9.0	-0.2	0
PIN 11	1.4	1.5	1.5	1.4	1.5	1.2	1.1
PIN 12	1.3	1.4	1.4	1.4	1.4	3.8	*
PIN 13	0	0	0	0	0	2.7	4.3

DIN NO	IC 2007						
PIN NO.	STOP	REC	PLAY	CUE	REV	SLOW(1/4)	F.A
PIN 1	0	0	0	0	0	0	0
PIN 2	0	-0.3	0.3	3.7	3.6	-0.3	0
PIN 3	0	0	5.0	5.0	4.9	5.0	5.0
PIN 4	0	0	0	0	0	-0.1	0
PIN 5	0	5.1	5.0	0	5.0	0	0
PIN 6	*	*	*	*	*	*	*
PIN 7	*	*	*	*	*	*	*
PIN 8	0	0	0	0	0	0	0
PIN 9	5.0	5.1	5.0	5.0	5.0	5.0	5.0
PIN 10	0	2.5	0	0	0	0	0
PIN 11	5.0	5.1	0	5.0	5.0	5.0	5.0
PIN 12	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PIN 13	0	0	0	0	0	-0.2	0
PIN 14	0	0	0	0	0	0.1	4.3
PIN 15	0	0	0	0	0	3.7	4.7
PIN 16	5.0	5.1	5.0	2.8	5.0	1.7	0
PIN 17	0	5.1	5.0	0	5.0	4.9	5.0
PIN 18	0	0	0	0	0	0.6	0

PIN NO.				IC 2008			
PIN NU.	STOP	REC	PLAY	CUE	REV	SL0W(1/4)	F.A
PIN 1	3.7	0	0	0	0	*	3.3
PIN 2	4.4	4.4	4.4	4.4	4.4	4.4	4.4
PIN 3	4.5	4.5	4.5	4.5	4.5	4.5	4.5
PIN 4	0	0	0	0	0	0	0
PIN 5	4.6	0	4.6	4.6	4.6	4.6	4.6
PIN 6	4.6	4.5	4.5	4.5	4.5	4.5	4.5
PIN 7	3.7	0	0	0	0	2.1	3.5
PIN 8	9.1	9.1	9.1	9.1	9.1	9.1	9.1

TP NO.	STOP	REC	PLAY	CUE	REV	SL0W(1/4)	F.A
TP2001	3.7	0	0	0	0	*	3.0
TP2002	5.0	5.1	5.0	5.0	5.0	5.0	5.0
TP2003	5.0	0	0	0	0	0	3.5
TP2004	4.5	4.5	4.5	2.6	4.5	3.5	0
TP2005	0.4	0	0	-0.6	-0.6	0.3	*
TP2006	3.5	3.5	3.5	3.5	3.5	4.5	4.5
TP2008	1.4	1.4	1.4	1.4	1.4	0	0

- VOLTAGE MEASUREMENTS:
 1. CUE, REVIEW, SLOW, F.ADV.
 COLOR BAR SIGNAL IN SLP MODE.
- 2. OTHERS
 - COLOR BAR SIGNAL IN SP MODE.
- ★: UNMEASURABLE OR UNNECESSARY.

4-12 CYLINDER MOTOR DRIVE CIRCUIT CAPSTAN MOTOR DRIVE CIRCUIT

	P10	(SERVO C.B.A.)
PIN NO.	SIGNAL NAME	DESTINATION
1	UNLOAD (H)	P24-1 SYSTEM CONTROL & MEMORY COUNTER C.B.A.
2	LOAD (H)	P24-2 SYSTEM CONTROL & MEMORY COUNTER C.B.A.
3	STOP (H)	P24-3 SYSTEM CONTROL & MEMORY COUNTER C.B.A.
4	SLOW/FADV	P24-4 SYSTEM CONTROL & MEMORY COUNTER C.B.A.
5	SLOW/TRACKING	P24-5 SYSTEM CONTROL & MEMORY COUNTER C.B.A.
6	PLAY (H)	P24-6 SYSTEM CONTROL & MEMORY COUNTER C.B.A.
7	REVERSE (H)	P24-7 SYSTEM CONTROL & MEMORY COUNTER C.B.A.
7	REVERSE (H)	P24-7 SYSTEM CONTROL & MEMORY CO

P23-7 SYSTEM CONTROL & MEMORY COUNTER C.B.A.

P23-8 SYSTEM CONTROL & MEMORY COUNTER C.B.A.

P24-8 SYSTEM CONTROL & MEMORY COUNTER C.B.A.

SP/LP/SLP

INSERT (

CYL M LOCK H

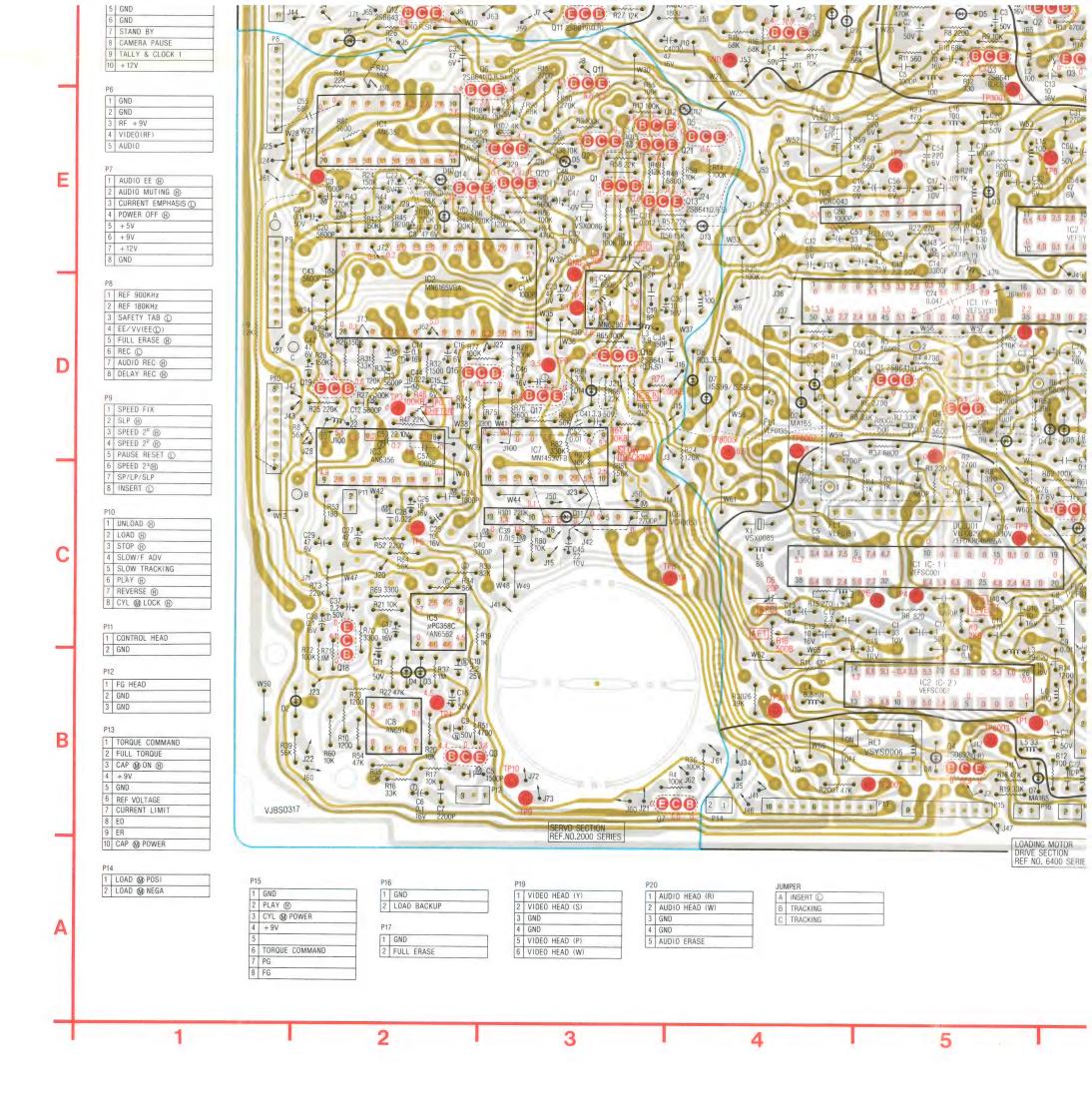
	P11	(SERVO C.B.A.)
PIN NO.	SIGNAL NAME	DESTINATION
1	CONTROL HEAD	P33-4 AUDIO/CONTROL HEAD C.B.A.
2	GND	P33-3 AUDIO/CONTROL HEAD C.B.A.

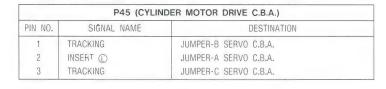
	P12	(SERVO C.B.A.)
PIN NO.	SIGNAL NAME	DESTINATION
1	FG HEAD	P32-2 FG HEAD C.B.A.
2	GND	P32-1 FG HEAD C.B.A.
3	GND	

	P13	(SERVO C.B.A.)	
PIN NO.	SIGNAL NAME	DESTINATION	
1	TORQUE COMMAND	P31-10 CAPSTAN MOTOR DRIVE C.B.A.	
2	FULL TORQUE	P31-9 CAPSTAN MOTOR DRIVE C.B.A.	
3	CAP M ON H	P31-8 CAPSTAN MOTOR DRIVE C.B.A.	
4	+9V	P31-7 CAPSTAN MOTOR DRIVE C.B.A.	
5	GND	P31-6 CAPSTAN MOTOR DRIVE C.B.A.	
6	REF VOLTAGE	P31-5 CAPSTAN MOTOR DRIVE C.B.A.	
7	CURRENT LIMIT	P31-4 CAPSTAN MOTOR DRIVE C.B.A.	
8	ED	P31-3 CAPSTAN MOTOR DRIVE C.B.A.	
9	ER	P31-2 CAPSTAN MOTOR DRIVE C.B.A.	
10	CAP M POWER	P31-1 CAPSTAN MOTOR DRIVE C.B.A.	

	P15	(SERVO C.B.A.)	
PIN NO.	SIGNAL NAME	DESTINATION	
1	GND	JUMPER-H CYLINDER MOTOR DRIVE C.B.A.	
2	PLAY (H)	JUMPER-G CYLINDER MOTOR DRIVE C.B.A.	
3	CYL M POWER	JUMPER-F CYLINDER MOTOR DRIVE C.B.A.	
4	+9V	JUMPER-E CYLINDER MOTOR DRIVE C.B.A.	
5			
6	TORQUE COMMAND	JUMPER-C CYLINDER MOTOR DRIVE C.B.A.	
7	PG	JUMPER-B CYLINDER MOTOR DRIVE C.B.A.	
8	FG	JUMPER-A CYLINDER MOTOR DRIVE C.B.A.	

	JUN	MPER (SERVO C.B.A.)	
PIN NO.	/ SIGNAL NAME	DESTINATION	
А	INSERT (P45-2 CYLINDER MOTOR DRIVE C.B.A.	
В	TRACKING	P45-1 CYLINDER MOTOR DRIVE C.B.A.	
С	TRACKING	P45-3 CYLINDER MOTOR DRIVE C.B.A.	





PIN NO.	SIGNAL NAME	DESTINATION
А	PG	P15-7 SERVO C.B.A.
В	FG	P15-8 SERVO C.B.A.
С	TORQUE COMMAND	P15-6 SERVO C.B.A.
E	+9V	P15-4 SERVO C.B.A.
F	CYL M POWER	P15-3 SERVO C.B.A.
G	PLAY (H)	P15-2 SERVO C.B.A.
Н	GND	P15-1 SERVO C.B.A.

	JUMPER (CYI	LINDER MOTOR DRIVE C.B.A.)
PIN NO.	SIGNAL NAME	DESTINATION
1	VH + (+B)	P27-1 CYLINDER MOTOR C.B.A.
2	HES	P27-2 CYLINDER MOTOR C.B.A.
3	HEM	P27-3 CYLINDER MOTOR C.B.A.
4	HEM	P27-4 CYLINDER MOTOR C.B.A.
5	HES	P27-5 CYLINDER MOTOR C.B.A.
6	VH —(GND)	P27-6 CYLINDER MOTOR C.B.A.
7	MAIN COIL 2	P27-7 CYLINDER MOTOR C.B.A.
8	MAIN COIL 3	P27-8 CYLINDER MOTOR C.B.A.
9	MAIN COIL COMMON	P27-9 CYLINDER MOTOR C.B.A.
10	MAIN COIL 1	P27-10 CYLINDER MOTOR C.B.A.

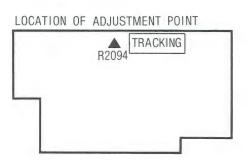
CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATIC DIAGRAM.

VOLTAGE MEASUREMENTS: COLOR BAR SIGNAL IN SP MODE.

★: UNMEASURABLE OR UNNECESSARY.

	STOP				REC		PLAY			
	E	В	C	E	В	C	E	В	C	
Q2023	0	0.6	0	0	0.7	0	0	0.7	0.1	
Q2024	0	0	0	0	0	0	0	0	0	
02025	0	0.6	0	0	0.6	0	0	0.6	0	

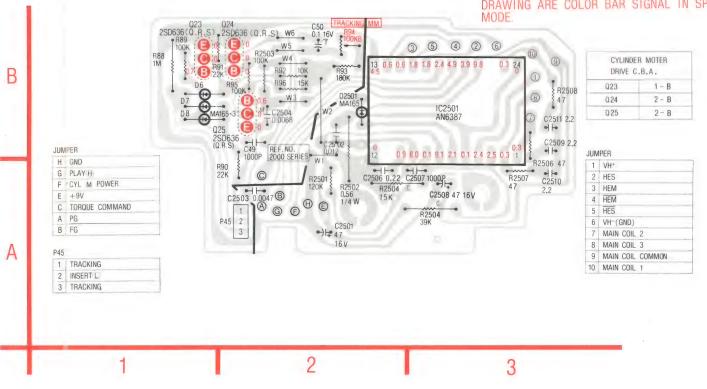
DIM	NO.		IC2501	
r i IV	NU.	STOP	REC	PLAY
PIN	1	12.9	0.3	0.3
PIN	2	12.9	0.3	0.3
PIN	3	2.5	2.5	2.5
PIN	4	2.4	2.4	2.4
PIN	5	0	0.1	0
PIN	6	0.5	2.1	2.1
PIN	7	9.1	9.1	9.1
PIN	8	0	0.1	0
PIN	9	8.8	7.9	7.9
PIN	10	0.7	0.9	0.9
PIN	11	*	*	*
PIN	12	0	0	0
PIN	13	2.3	4.5	4.5
PIN	14	0.5	0.6	0.6
PIN	15	0.6	0.6	0.6
PIN	16	1.7	1.8	1.8
PIN	17	1.9	1.8	1.8
PIN	18	0.1	2.4	2.4
PIN	19	5.0	4.9	4.8
PIN	20	5.0	3.9	3.8
PIN	21	12.8	9.8	9.8
PIN	22	*	*	*
PIN	23	12.9	0.3	9.6
PIN	24	0	0	0

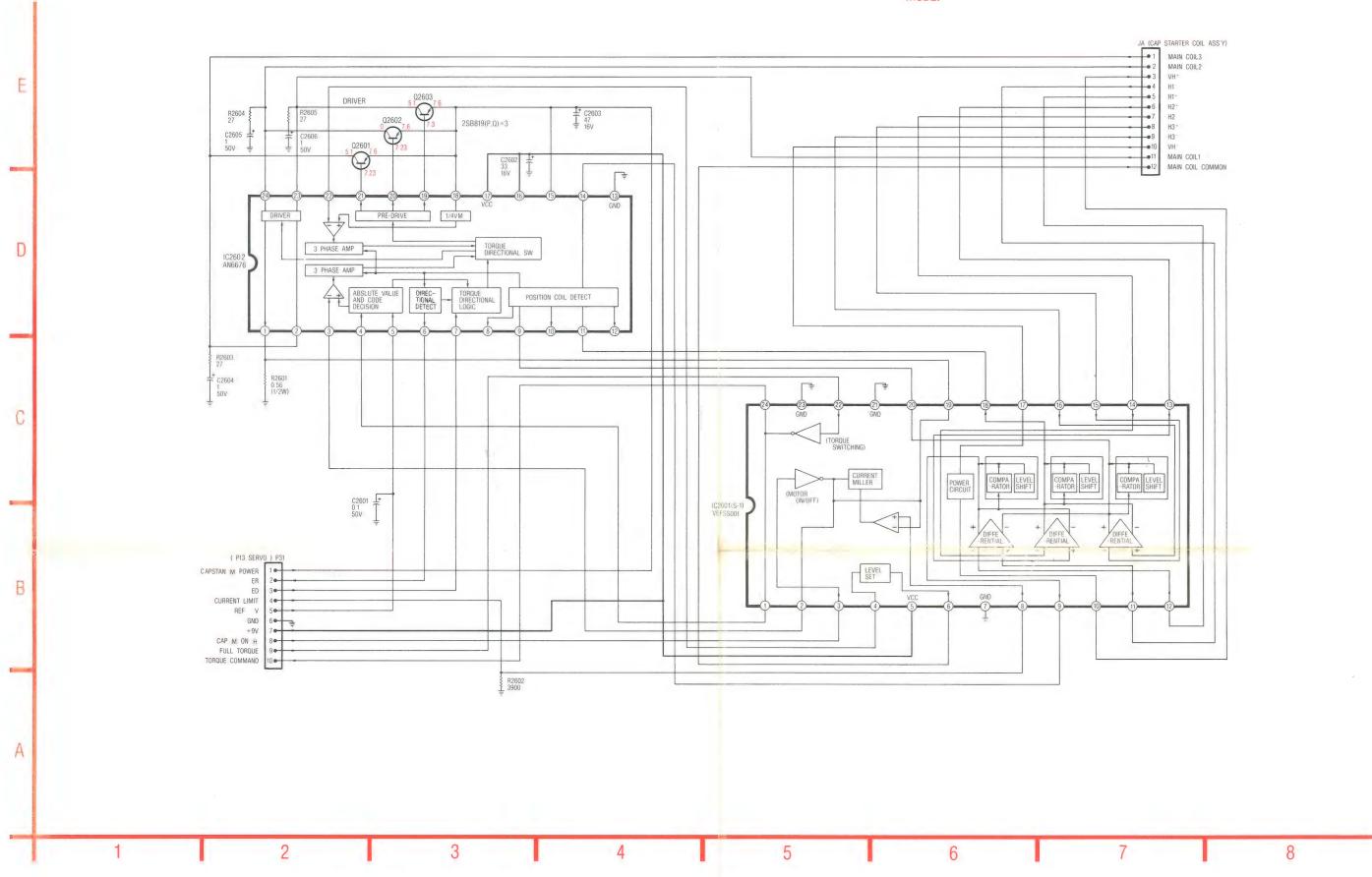




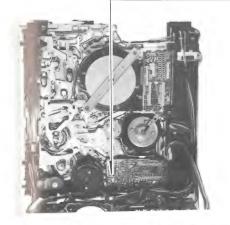
CYLINDER MOTOR DRIVE C.B.A. (VEPS0227A)

THE VOLTAGE MEASUREMENTS GIVEN IN THIS DRAWING ARE COLOR BAR SIGNAL IN SP-REC MODE.





CAPSTAN MOTOR DRIVE C.B.A.



	P31 (CAPST	AN MOTOR DRIVE C.B.A.)
PIN NO.	SIGNAL NAME	DESTINATION
1	CAP M POWER	P13-10 SERVO C.B.A.
2	ER	P13-9 SERVO C.B.A.
3	ED	P13-8 SERVO C.B.A.
4	CURRENT LIMIT	P13-7 SERVO C.B.A.
5		i.
6	GND	P13-5 SERVO C.B.A.
7	+9V	P13-4 SERVO C.B.A.
8	CAP M ON H	P13-3 SERVO C.B.A.
9	FULL TORQUE	P13-2 SERVO C.B.A.
10	TORQUE COMMAND	P13-1 SERVO C.B.A.

JA (CAPSTAN MOTOR DRIVE C.B.A.) DESTINATION SIGNAL NAME PIN NO. JA-1 CAPSTAN STARTER COIL ASS'Y C.B.A. MAIN COIL 3 JA-2 CAPSTAN STARTER COIL ASS'Y C.B.A. MAIN COIL 2 VH+ (+B) JA-3 CAPSTAN STARTER COIL ASS'Y C.B.A. JA-4 CAPSTAN STARTER COIL ASS'Y C.B.A. H1 -JA-5 CAPSTAN STARTER COIL ASS'Y C.B.A. H1 + H2+ JA-6 CAPSTAN STARTER COIL ASS'Y C.B.A. JA-7 CAPSTAN STARTER COIL ASS'Y C.B.A. H2-JA-8 CAPSTAN STARTER COIL ASS'Y C.B.A. H3+ JA-9 CAPSTAN STARTER COIL ASS'Y C.B.A. H3-JA-10 CAPSTAN STARTER COIL ASS'Y C.B.A. 10 VH- (GND) MAIN COIL 1 JA-11 CAPSTAN STARTER COIL ASS'Y C.B.A. JA-12 CAPSTAN STARTER COIL ASS'Y C.B.A. MAIN COIL COMMON

3-B

3-B

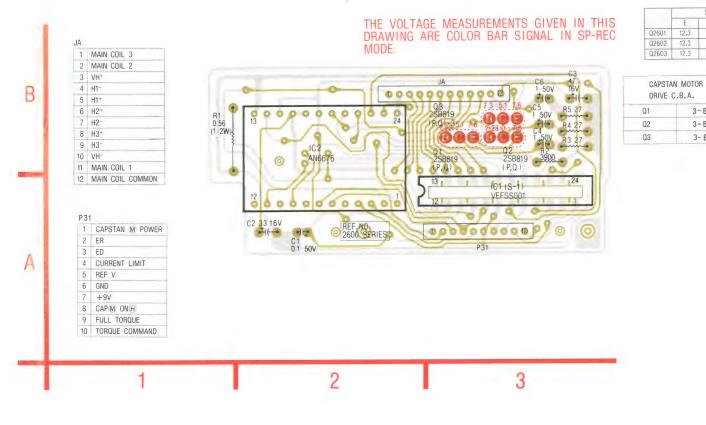
3-B

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATIC DIAGRAM.

VOLTAGE MEASUREMENTS:
1. CUE, REVIEW, SLOW, F.ADV. COLOR BAR SIGNAL IN SLP MODE. 2. OTHERS COLOR BAR SIGNAL IN SP MODE.

★: UNMEASURABLE OR UNNECESSARY.

CAPSTAN MOTOR DRIVE C.B.A. (VEPS0226A)



		STOP			FF			REW			REC			PLAY			CUE			REV		5	SLOW(1/4	1)		F.A	
	E	В	C	E	В	C	E	В	С	E	В	С	Е	В	С	E	В	C	Е	В	C	Е	В	C	E	В	С
Q2601	12.3	11.8	7.5 ·	12.1	11.8	7.2	12.1	11.8	7.2	7.6	7.2	5.1	12.1	11.8	7.1	12.0	11.7	7.1	11.9	11.6	7.0	12.0	*	*	12.1	*	*
02602	12.3	12.2	7.5	12.1	11.8	7.2	12.1	11.8	7.1	7.6	7.2	0	12.1	11.8	7.2	12.0	11.7	7.1	11.9	11.7	7.1	12.0	*	*	12.0	12.0	*
Q2603	12.3	12.2	7.5	12.1	11.8	7.2	12.1	11.8	7.2	7.6	7.3	5.1	12.1	11.8	7.2	12.0	11.7	7.1	12.0	11.7	7.0	12.0	*	*	12.0	12.0	*

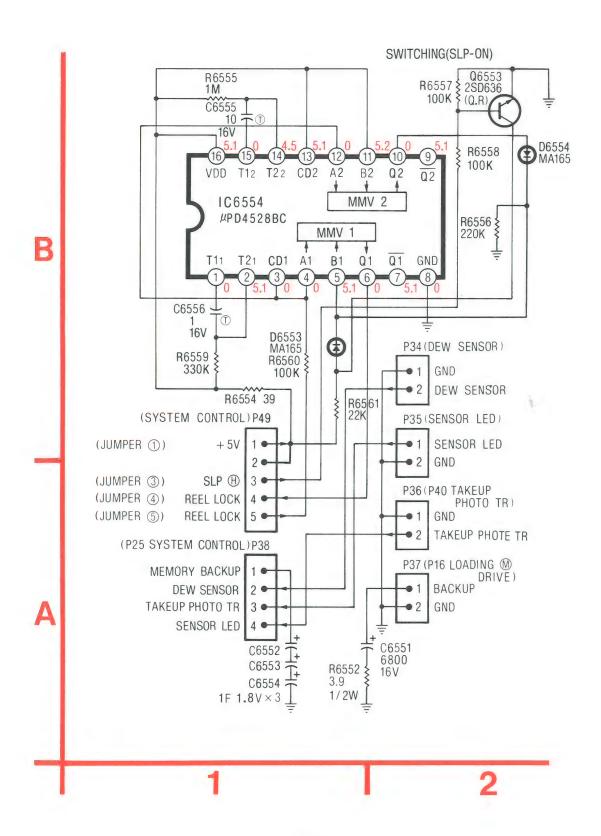
0111 110					IC2601				
PIN NO.	STOP	FF	REW	REC	PLAY	CUE	REV	SLOW(1//4)	F.A
PIN 1	1.9	2.4	2.4	2.4	2.4	2.3	2.3	0.1	0
PIN 2	1.1	0	0	0	0.1	0.1	0.1	0.4	*
PIN 3	0	4.6	4.6	4.7	4.6	4.6	4.6	4.6	*
PIN 4	4.0	3.9	3.8	2.8	3.9	3.9	3.8	3.8	3.8
PIN 5	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1
PIN 6	7.5	7.2	7.1	5.2	7.1	0	7.0	7.1	7.2
PIN 7	0	0	0	0	0	0	0	0	0
PIN 8	1.4	1.4	1.4	1.4	1.4	1.4	1.4	0.3	*
PIN 9	5.4	5.2	5.2	5.2	5.2	5.3	5.3	5.2	5.0
PIN 10	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
PIN 11	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
PIN 12	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
PIN 13	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.6
PIN 14	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
PIN 15	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
PIN 16	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
PIN 17	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
PIN 18	5.0	5.2	5.2	5.2	5.2	5.3	5.3	*	5.0
PIN 19	0	0.1	0	0	0.1	0.1	0.1	0.1	0
PIN 20	5.4	5.2	5.2	5.2	5.3	0	5.3	*	5.0
PIN 21	0	0	0	0	0	0	0	0	0
PIN 22	0	0	0	0	0	0	0	*	*
PIN 23	0	0	0	0	0	0	0	0	0
PIN 24	1.9	2.4	2.4	2.4	2.4	2.3	2.3	1.0	*

DIM NO					IC2602				
PIN NO.	STOP	FF	REW	REC	PLAY	CUE	REV	SLOW(1/4)	F.A
PIN 1	0	0	0	0.1	0	0.1	0.1	0.1	*
PIN 2	7.5	0.3	0.3	5.1	7.1	7.1	7.0	*	*
PIN 3	1.0	0	0.1	0.1	0.1	0.1	0.1	0.4	*
PIN 4	1.9	2.4	2.4	2.4	2.4	2.3	2.3	0.1	0
PIN 5	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PIN 6	0.5	0.2	0.5	0.2	0.2	0.2	4.7	0.2	0.1
PIN 7	0	0	5.0	0	0	0	5.0	*	0
PIN 8	4.8	4.6	4.6	4.6	4.6	4.6	4.6	*	*
PIN 9	5.4	5.2	5.2	5.2	5.2	5.3	5.3	*	5.0
PIN 10	4.3	4.6	4.6	4.6	4.6	4.6	4.6	*	4.4
PIN 11	5.0	5.2	5.2	5.2	5.3	5.3	5.3	*	5.0
PIN 12	4.7	4.6	4.6	4.6	4.6	4.6	4.6	*	*
PIN 13	0	0	0	0	0	0	0	0	0
PIN 14	5.4	5.2	5.2	5.3	5.3	5.3	5.3	*	*
PIN 15	12.3	12.1	12.1	7.6	12.1	12.0	11.9	12.0	12.0
PIN 16	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1
PIN 17	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1
PIN 18	12.3	12.1	12.1	7.6	12.0	12.0	11.9	12.0	12.1
PIN 19	12.2	11.8	11.8	7.3	11.8	11.7	11.7	*	12.0
PIN 20	12.3	11.8	11.8	7.3	11.8	11.7	11.7	*	11.4
PIN 21	11.7	11.8	11.8	7.3	11.8	11.7	11.7	*	11.4
PIN 22	4.0	3.9	3.9	2.8	3.9	3.8	3.8	3.8	3.8
PIN 23	7.5	7.1	7.1	5.1	7.2	7.1	7.0	*	7.6
PIN 24	7.5	7.2	7.2	5.2	7.2	7.1	7.1	*	*

4-12

SUB SYSTEM CONTROL SCHEMATIC DIAGRAM

THE VOLTAGE MEASUREMENTS GIVEN IN THIS DRAWING ARE COLOR BAR SIGNAL IN SP-REC MODE.



P34 (SUB SYSTEM CONTROL C.B.A.)							
PIN NO.	SIGNAL NAME	DESTINATION					
1	GND	DEW SENSOR					
2	DEW SENSOR	DEW SENSOR					

P35 (SUB SYSTEM CONTROL C.B.A.)								
PIN NO.	SIGNAL NAME	DESTINATION						
1	SENSOR LED	SENSOR LEDS C.B.A.						
2	GND	SENSOR LEDS C.B.A.						

P36 (SUB SYSTEM CONTROL C.B.A.)							
PIN NO.	SIGNAL NAME	DESTINATION					
1	GND	P40-1 TAKEUP PHOTO TR C.B.A.					
2	TAKEUP PHOTO TR	P40-2 TAKEUP PHOTO TR C.B.A.					

P37 (SUB SYSTEM CONTROL C.B.A.)								
PIN NO.	SIGNAL NAME	DESTINATION						
1	LOAD BACKUP	P16-2 LOADING MOTOR DRIVE C.B.A.						
2	GND	P16-1 LOADING MOTOR DRIVE C.B.A.						

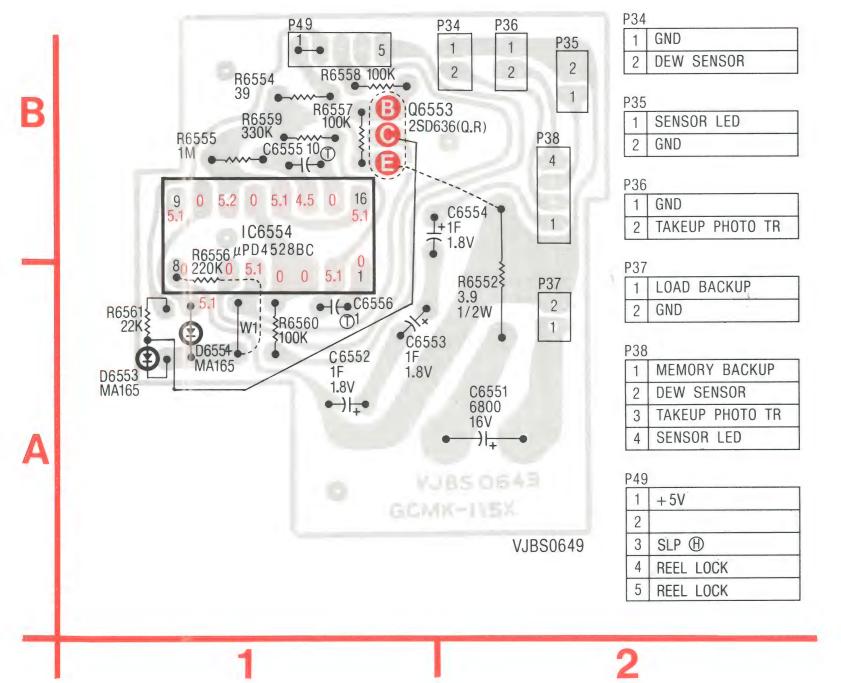
	P38 (SUB SYSTEM CONTROL C.B.A.)								
PIN NO.	SIGNAL NAME	DESTINATION							
1	MEMORY BACKUP	P25-1 SYSTEM CONTROL & MEMORY COUNTER C.B.A.							
2	DEW SENSOR	P25-2 SYSTEM CONTROL & MEMORY COUNTER C.B.A.							
3	TAKEUP PHOTO TR	P25-3 SYSTEM CONTROL & MEMORY COUNTER C.B.A.							
4	SENSOR LED	P25-4 SYSTEM CONTROL & MEMORY COUNTER C.B.A.							

	P49 (SUB S	SYSTEM CONTROL C.B.A.)										
PIN NO.	SIGNAL NAME	DESTINATION										
1	+5V	JUMPER-1 SYSTEM CONTROL & MEMORY COUNTER C.B.A										
2												
3	SLP (H)	JUMPER-3 SYSTEM CONTROL & MEMORY COUNTER C.B.A										
4	REEL LOCK	JUMPER-4 SYSTEM CONTROL & MEMORY COUNTER C.B.A										
5	REEL LOCK	JUMPER-5 SYSTEM CONTROL & MEMORY COUNTER C.B.A										

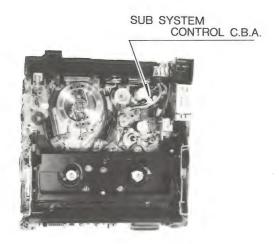
CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATIC DIAGRAM.

SUB SYSTEM CONTROL C.B.A. (VEPS0649A)

THE VOLTAGE MEASUREMENTS GIVEN IN THIS DRAWING ARE COLOR BAR SIGNAL IN SP-REC



4-13 SUB SYSTEM CONTROL CIRCUIT



SUB-SYSTEM CONTROL C.B.A.

PIN NO.					IC6554				
PIN NU.	STOP	FF	REW	REC	PLAY	CUE	REV	SL0W(1-4)	F.A
PIN 1	0	0	0	0	0	0	0	0	0
PIN 2	5.1	5.1	5.1	5.1	5.1	5.1	5.2	5.1	5.1
PIN 3	0	0	0	0	0	0	0	0	0
PIN 4	0	0	0	0	0	0	0	0	0
PIN 5	5.1	5.1	5.1	5.1	5.1	4.5	4.5	5.1	5.1
PIN 6	0	0	0	0	0	0	0	0	0
PIN 7	5.0	5.1	5.1	5.1	5.1	5.1	5.2	5.1	5.1
PIN 8	0	0	0	0	0	0	0	0	0
PIN 9	0	5.1	5.1	5.1	5.1	5.2	5.2	*	0
PIN 10	5.1	0	0	0	0	0	0	*	*
PIN 11	5.1	5.1	5.1	5.2	5.1	5.2	5.2	5.1	5.1
PIN 12	0	0	0	0	0	0	0	0	0
PIN 13	5.1	5.1	5.1	5.1	5.1	5.2	5.2	5.1	5.1
PIN 14	*	4.5	4.5	4.5	4.5	4.6	4.6	*	*
PIN 15	0	0	0	0	0	0	0	0	0
PIN 16	5.1	5.1	5.1	5.1	5.1	5.2	5.2	5.1	5.1

VOLTAGE MEASUREMENTS:
1. CUE, REVIEW, SLOW, F.ADV.
COLOR BAR SIGNAL IN SLP MODE
2. OTHERS
COLOR BAR SIGNAL IN SP MODE.

★: UNMEASURABLE OR UNNECESSARY.

4-14
SYSTEM CONTROL & MEMORY COUNTER
C.B.A.

PIN NO.					IC6001				
PIN NO.	ST0P	FF	REW	REC	PLAY	CUE	REV	SLOW(1/4)	F.A
PIN 1	0	0	0	0	0	0	0	0	0
PIN 2	0	0	0	0	0	0	0	0	0
PIN 3	0	0	0	0	0	0	0	0	0
PIN 4	4.6	4.5	4.5	4.6	4.5	4.5	4.5	4.5	4,5
PIN 5	5.0	5.0	5.0	4.9	4.9	4.8	4.8	5.0	4.8
PIN 6	-0.3	0	0	-0.3	-0.3	*	*	- 0.2	- 0.2
PIN 7	4.6	4.5	4.5	4.6		1 1	4.5	4.5	4.5
PIN 8	0	0	0	0	0	0	0	0	0
PIN 9	5.0	4.9	4.9	4.9	4.9	4.9	4.9	4.9	- 0
PIN 10	0	5.0	5.0	0	0	4.9	4.9	0	0
PIN 10	0	0.0	0	0	0	0			
							0	0	0
1 114 12	- 0.3	5.0	5.0	- 0.3	- 0.3	5.0	5.0	-0.3	0
PIN 13	0.4	- 0.3	- 0.3	- 0.4	- 0.4	- 0.4	0	*	. 0.4
PIN 14	0.4	- 0.3	0.3	- 0.3	- 0.4	- 0.4	*	*	*
PIN 15	5.1	5.0	5.0	5.1	5.0	5.0	5.0	5.0	5.0
PIN 16	5.1	5.0	5.1	5.1	5.1	0	5.1	5.0	5.1
PIN 17	5.2	5.1	5.1	5.2	5.2	5.1	5.1	5.1	5.1
PIN 18	0	0	0	0	0	0	0	0	0
PIN 19	0	0	0	0	0	0	0	0	0
PIN 20	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
PIN 21	0	0	0	0	0	0	0	0	0
PIN 22	0	0	0	0	0	0	0	0	0
PIN 23	2,2	2.1	2.1	2.2	2.1	2,1	0	2.1	- 0
PIN 24	3.1	3.1	3.1	3.1	3.1	3.0	0	3.1	3.1
PIN 25	0	4.0	4.0	4.1	4.0	4.0	0	4.0	4.0
PIN 26	5,1	5.0	5.0	5.1	5.1	5.0	0	2.8	0
PIN 27	3.6	0	0			3.5			
		-		3.6	3.5		3.6	3.5	0
PIN 28	3.6	0	3.6	3.6	3.6	3.5	3.6	3.6	0
PIN 29	3.6	0	3.6	3.6	3.6	3.6	0	3.6	0
PIN 30	3.6	0	0	3.6	3.6	3.6	0	0	0
PIN 31	3.6	0	3.6	3.6	3.6	3.5	0	3.6	0
PIN 32	0	3.5	3.6	3.6	3.6	3.6	3.6	3.6	0
PIN 33	0	3.6	3.6	3.6	3.6	3.6	3.6	0	3.6
PIN 34	3.6	3.6	3.6	3.6	3.6	0	0	0	3.6
PIN 35	0	3.6	3.6	3.6	3.6	3.6	3.6	0	3.6
PIN 36	3.6	3.6	3.6	3.6	3.6	3.6	3.6	0	3.6
PIN 37	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.5	0
PIN 38	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
PIN 39	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3,6	3.6
PIN 40	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	0
PIN 41	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	-0
PIN 42	3.6	3.6	3.6	3.6					
PIN 42	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	0
PIN 43				3.6					
	3.6	3.6	3.6	·	3.6	3.6	3.6	3.6	3.6
PIN 45	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	-
PIN 46	3.6	3.6	3.6	0	3.6	3.6	3.6	3.6	0
PIN 47	3.6	3.6	3.6	0	3.6	3.6	0	3.6	3.6
PIN 48	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
PIN 49	3.6	3.6	3.6	3.6	3.6	3.6	0	3.6	3.6
PIN 50	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
PIN 51	3.6	3.6	3.6	3.6	3.6	3.6	0	3.6	3.6
PIN 52	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
PIN 53	3.6	0	3.6	3.6	3.6	3.6	3.6	0	0
PIN 54	3.6	3.6	3.6	3.6	3.6	3.6	0	0	0
PIN 55	0	0	0	0	0	0	0	0	0
PIN 56	0	0	0	0	0	0	0	0	0
PIN 57	2.0	2.0	2.0	2.0	2.1	2.1	2.1	0	2.1
PIN 58	5.1	5.0	5.0	5.0	0	5.0	5.0	0	0
PIN 59	3.0	3.0	3.0	3.0	0	3.0	3.0	0	3.0
	0	0	0	0	0	0	0	ó	0
PIN 61	5.1	0	0	4.8	5.0	*	*	0	0
PIN 62	5.1	0	0	*	0	*	*	0	5.0
PIN 63	5.1	0	0	*	5.0	*	*	0	5.1
PIN 64	5.1	5.0	5.0	5.0	5.0	5.0	5.0	0	5.0

TP NO.	STOP	FF	REW	REC	PLAY	CUE	REV	SLOW(1-4)	F.A
TP6001	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
TP6002	4.6	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5

VOLTAGE MEASUREMENTS:
1. CUE, REVIEW, SLOW, F.ADV.
COLOR BAR SIGNAL IN SLP MODE.
2. OTHERS
COLOR BAR SIGNAL IN SP MODE.

★: UNMEASURABLE OR UNNECESSARY.

					IC6002				
PIN NO.	STOP	FF	REW	REC	PLAY	CUE	REV	SLOW(1/4)	F.A
PIN 1	0	0	0	0	0	0	0	0	0
PIN 2	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.0	5.1
PIN 3	0	0	0	0	0	0	0	0	0
PIN 4	0	0	0	0	0	0	0	0	0
PIN 5	5.0	5.0	5.0	5.1	0	5.0	5.0	5.0	5.0
PIN 6	5.1	5.0	5.0	5.1	5.0	5.0	5.0	5.0	5.0
PIN 7	4.4	4.3	4.3	4.4	4.4	4.3	4.3	4.3	4.3
PIN 8	4.3	4.3	4.3	4.3	4.2	4.3	4.3	4.3	4.3
PIN 9	0	0	0	0	0	0	0	0	0
PIN 10	0	0	0	0	0	0	0	0	0
PIN 11	0	0	0	0	0	0	0	0	0
PIN 12	- 6	0	0	0	0	0	0	0	0
PIN 13	- 0.3	- 0.2	- 0.2	0.3	0.3	0.4	0.3	0.3	0.3
PIN 14	1.3	1.0	1.0	4.3	4.3	4.2	4.2	4.3	4.3
PIN 15	- 0.2	5.0	5.0	0.9	4.2	4.2	5.0	5.0	5.0
PIN 16	0	0	0	0	0	0	0	0	0
PIN 17	5.0	5.0	5.0	0	5.0	4.8	4.8	5.0	4.9
PIN 18	0	0	0	0	0	0	0	0	0
PIN 19	1.3	0	1.3	0	1.4	1.3	1.3	1.2	0
PIN 20	-0.3	- 0.2	- 0.3	- 0.3	- 0.3	- 0.3	- 0.2	0	- 0.3
PIN 21	- 0.2	0	- 0.1	- 0.1	- 0.1	- 0.1	0	0	0
PIN 22	0	0	0	0	0	0	0	0	0
PIN 23	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
PIN 24	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.0	5.1
PIN 25	4.6	4.5	4.5	4.6	4.6	4.5	0	4.6	4.5
PIN 26	n	0	n	Λ	0	û	0	0	0
PIN 27	0	0	0	0	0	0	0	0	0
PIN 28	0	0	0	0	0	0	0	0	0
PIN 29	5.1	5.1	0	5.1	5.1	5.1	0	5.0	5.1
PIN 30	0	5.1	5.1	5.1	5.1	5.1	5.1	5.0	5.1
PIN 31	5.1	0	5.1	5.1	5.1	0	5.1	5.0	5.1
PIN 32	5.1	5.0	5.0	0	0	0	0	0	0
PIN 33	5.0	0	4.9	0	5.0	4.9	4.9	0	4.9
PIN 34	5.1	5.0	5.0	5.1	5.0	5.0	5.0	5.0	5.0
PIN 35	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.0	0
PIN 36	5.1	5.1	5.1	5.1	5.1	5.1	5.1	0	0
PIN 37	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	0.2
PIN 38	0	0	0	0	0	0	0	0	0
PIN 39	0	0	0	0	0	0	0	0	0
PIN 40	0	0	0	0	0	0	0	0	0
PIN 41	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.0	5.1
PIN 42	0	0	0	0	0	0	0	0	0

PIN NO.					106003				
	STOP	FF	REW	REC	PLAY	CUE	REV	SLOW(1-4)	F.A
PIN 1	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	0
PIN 2	5.1	5.0	5.0	5.0	0	0	0	5.1	0
PIN 3	5.1	5.0	5.0	5.0	0	0	0	5.0	0
PIN 4	0	0	0	0	0	4.8	0	0	4.8
PIN 5	0	0	5.0	0	0	4.9	0	0	0
PIN 6	0	0	0	0	0	5.0	5.0	0	0
PIN 7	0	4.6	4.6	0	0	0	U	0	0
PIN 8	0	0	0	0	0	0	0	0	0
PIN 9	0	0	0	0	0	0	0	0	0
PIN 10	0	0	0	0	0	4.1	0	0	4.1
PIN 11	5.1	5.2	5.0	0	0	0	0	5.2	0
PIN 12	0	0	0	0	0	0	0	0	0
PIN 13	0	0	0	0	0	0	0	0	0
PIN 14	0	0	0	0	0	0	0	0	0
PIN 15	0	0	0	0	0	0	0	0	0
PIN 16	0	0	0	0	0	0	0	0	0
PIN 17	0	0	0	5.2	5.2	5.2	0	0	5.1
PIN 18	0	0	0	0	0	0	5.0	0	0
PIN 19	0	0	0	5.0	5.0	4.9	4.9	0	0
PIN 20	0	0	0	0	0	0	0	0	0
PIN 21	0.1	0	0	0	0	0	0	0	0
PIN 22	0.1	0	0	0	0	0	0	0	0
PIN 23	0	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
PIN 24	5.1	5.0	5.0	5.0	5.1	5.0	5.0	5.1	5.1
PIN 25	5.1	0	4.5	4.6	4.6	4.6	0	4.5	4.5
PIN 26	4.6	0	0	5.0	5.1	5.0	0	5.1	5.0
PIN 27	5.1	0	0	0	5.1	5.0	0	5.1	0
PIN 28	5.1	0	5.0	0	5.1	5.0	0	-0.3	5.0
PIN 29	- 0.3	- 0.3	- 0.3	5.0	5.1	5.0	5.0	- 0.3	5.0
PIN 30	- 0.3	- 0.3	- 0.3	0	0	5.0	0	- 0.3	5.0
PIN 31	0	0	0	0	5.0	5.0	5.0	0	5.0
PIN 32	0	0	0	0	5.1	5.0	5.0	0	5.0
PIN 33	0.6	0.6	0.6	0	0	0.5	0	0	0
PIN 34	0.6	0.6	0.6	0	0	0.5	0.5	0	0
PIN 35	0.6	0.5	0.5	0	0	0.5	0.5	0	0
PIN 36	0	5.0	0	5.0	5.1	5.0	5.0	5.1	0
PIN 37	2.4	2.4	0	0	2.4	2.4	2.4	2.4	0
PIN 38	0	0	0	0	0	0	0	0	0
PIN 39	0	4.9	4.9	0	0	0	0	4.9	0
PIN 40	0	0	0	4.9	0	0	0	0	0
PIN 41	0	0	0	5.0	0	0	0	0	0
PIN 42	0	0	0	4.9	0	0	0	0	0

PIN NO.					IC6004				
FIN NO.	STOP	FF	REW	REC	PLAY	CUE	REV	SLOW(1, 4)	F.A
PIN 1	5.1	5.0	5.0	5.1	5.0	5.0	5.0	5.0	5.0
PIN 2	0	0	0	0	0	0	0	0	0
PIN 3	0.2	5.0	5.0	0.9	4.2	5.0	5.0	5.0	5.0
PIN 4	5.1	5.1	5.2	5.2	5.2	5.1	5.2	5.1	5.1
PIN 5	4.3	1.0	1.0	4.3	4.3	4.2	4.2	4.3	4.3
PIN 6	5.2	5.1	5.2	5.2	5.2	5.2	5.2	5.1	5.1
PIN /	- U.J	- 0.2	- 0.2	3.4	3.4	3.4	3.4	3.5	3.4
PIN 8	0	0	0	0	0	0	0	0	0
PIN 9	5.0	5.0	5.0	5.0	5.0	4.9	4.8	5.0	4.8
PIN 10	0	0	0	0	0	0	0	0	0
PIN 11	5.0	5.0	5.0	4.9	5.0	4.9	4.8	5.0	4.9
PIN 12	4.7	4.8	4.8	4.7	4.7	4.7	4.7	4.9	4.8
PIN 13	2.0	5.0	5.0	0.9	4.2	5.0	5.0	5.0	5.0
PIN 14	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
PIN 15	4.4	4.3	4.3	4.4	4.3	4.3	4.3	4.3	4.0
PIN 16	5.2	5.1	5.2	5.2	5.2	5.2	5.2	5.1	5.2

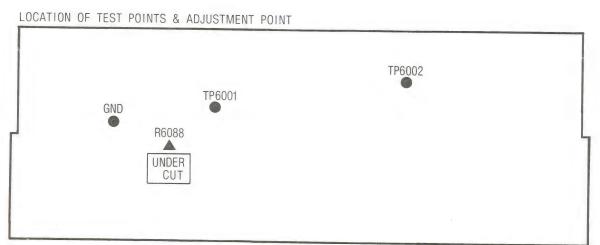
PIN	NO					IC6005				
PIN	NO.	STOP	FF	REW	REC	PLAY	CUE	REV	SL0W(1/4)	F.A
PIN	1	4.3	4.3	4.3	4.3	4.2	4.3	4.3	4.3	4.3
PIN	2	0.6	0.6	0.6	0	0.6	0.6	0.6	0.6	0
PIN	3	4.7	- 0.2	- 0.2	0.3	0.3	0.3	0.3	0.3	0.3
PIN	4	4.8	4.8	4.8	4.8	4.7	4.7	4.6	4.9	4.8
PIN	5	5.0	5.0	5.0	4.9	4.9	4.8	4.8	5.0	4.9
PIN	6	5.2	5.2	5.2	0.5	0.6	5.2	5.2	5.2	5.2
PIN	7	- 0.2	5.0	5.0	4.9	4.2	5.0	5.0	5.0	5.0
PIN	8	0	0	0	0	0	0	0	0	0
PIN	9	4.3	1.0	1.0	4.3	4.3	4.2	4.2	4.3	4.3
PIN	10	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
PIN	11	0.3	- 0.2	- 0.2	0.3	4.4	3.4	3.4	3.5	3.4
PIN	12	0	0	0	0	0	0	0	0	0
PIN	13	4.3	1.0	1.0	4.3	4.4	4.2	4.2	4.3	4.3
PIN	14	0	0	0	0	0	0	0	0	0
PIN	15	4.3	4.3	4.3	4.4	4.3	4.3	4.3	4.3	4.3
PIN	16	5.2	5.2	5.2	5.2	5.1	5.2	5.2	5.2	5.2

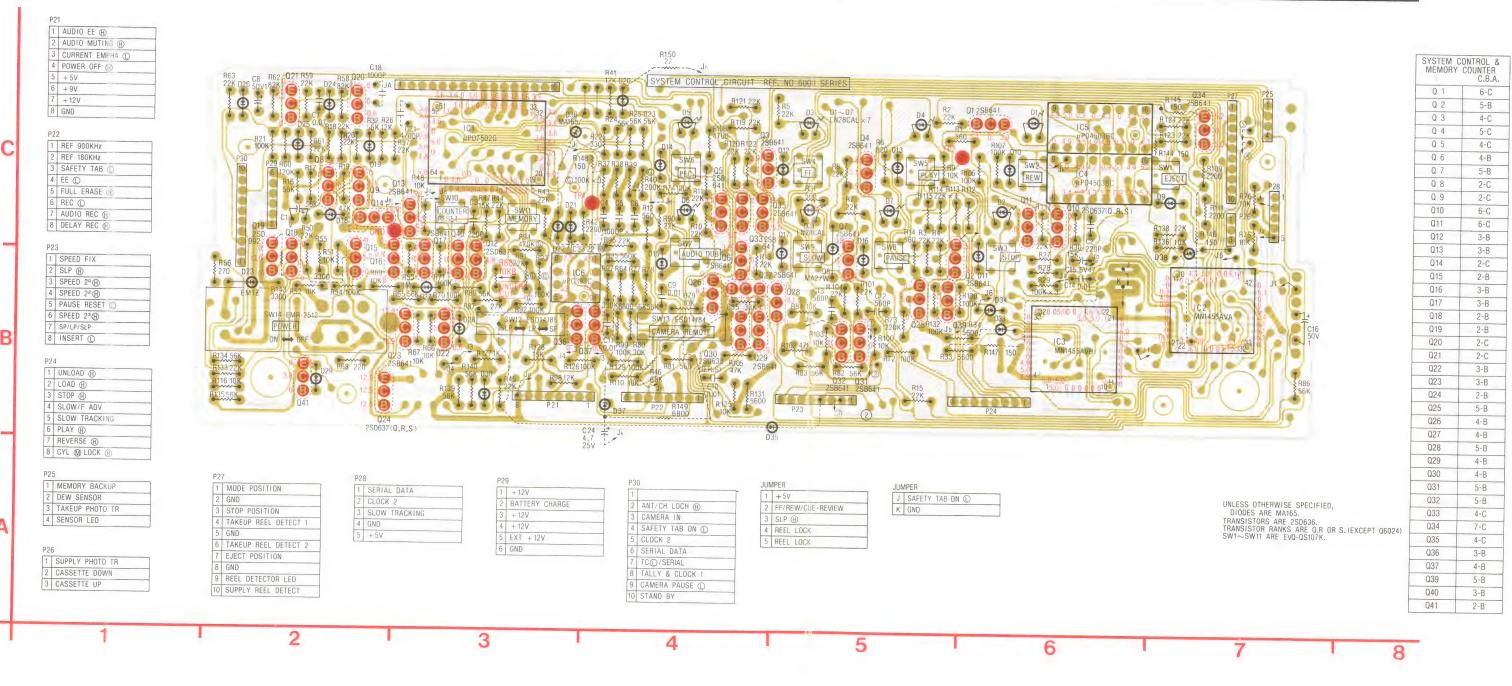
PIN NO.		IC6006											
PIN NU.	STOP	FF	REW	REC	PLAY	CUE	REV	SLOW(1.4)	FA				
PIN 1	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9				
PIN 2	0	0	0	0	0	0	0	0	0				
PIN 3	0.7	0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.6				
PIN 4	0	0	0	0	0	0	0	0	0				
PIN 5	4.7	4.6	4.6	4.7	4.6	4.6	4.6	4.6	4.6				
PIN 6	3.7	3.7	3.7	3.8	3.7	3.7	3.7	3.8	3.7				
PIN 7	5.2	5.1	5.1	5.2	5.2	5.1	5.1	5.2	5.1				
PIN 8	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9				

		STOP		T	FF		T	REW			REC			PLAY			CUE			REV		9	SLOW(1/4	1)			
	E	В	С	E	В	С	E	В	С	E	В	С	F	В	С	E	В	С	E	В	С	F	R	С	Е	В	С
Q6001	4.4	5.1	0	3.9	5.0	0	3.9	3.2	3.8	3.9	5.1	0	4.4	5.1	0	3.9	5.1	0	3.9	3.2	3.9	3.9	5.0	0	3.9	5.0	0
06002	5.2	4.0	5.1	5.1	5.1	- 0.3	0	5.1	0.2	5.2	5.1	0	5.2	5.1	0	5.2	5.1	0	5.2	5.1	0	5.2	5.1	0	5.2	0	0
Q6003	4.4	5.1	0	3.9	3.2	3.8	3.9	5.0	0	3.9	5.1	0	4.4	5.0	0	3.9	3.2	3.8	3.9	5.1	.0	3.9	5.0	0	3.9	5.1	0
06004	5.2	5.1	0	5.2	5.1	0	5.2	*5.1	0	5.2	4.5	5.1	5.2	4.5	5.1	5.2	4.5	5.1	5.2	4.5	5.1	5.2	4.5	5.1	5.2	4.5	5.1
Q6005	4.4	5.0	0	3.9	5.0	0	3.9	5.0	0	3.9	3.2	3.8	4.4	5.0	0	3.9	5.0	0	3.9	5.0	0	3.9	5.0	0	3.9	5.0	0
Q6006	4.4	5.0	0	3.9	5.0	0	3.9	5.0	0	3.9	5.1	0	4.4	5.0	0	3.9	5.0	0	3.9	5.0	0	3.9	5.0	0	3.9	5.0	0
Q6007	4.8	5.1	0.1	3.9	5.0	0	3.9	2.8	0	3.9	5.1	0	4.4	5.0	0	3.9	5.1	0	3.9	5.1	0	3.9	5.0	0	3.9	3.2	3.8
Q6008	5.2	5.1	0	5.2	*	0	5.2	*	5.1	5.2	*	0	5.2	*	0	5.2	*	0	5.2	*	0	5.2	4.6	0	5.2	*	0
Q6009	0	0	5.1	0	0	5.1	0	0	5.0	0	0	5.1	0	0	5.1	0	0	5.1	0	0	5.1	0	0	5.1	0	0	5.1
Q6010	0	0	4.8	0	0	4.9	0	0	2.8	0	0	0	0	0	4.9	0	0	4.6	0	0	4.7	0	0	4.9	0	0	0
Q6011	0	0	3.4	0	0	2.8	0	0	4.8	0	0	2.8	0	0	3.4	0	0	2.8	0	0	2.8	0	0.6	0	0	0	2.8
06012	0	0.1	4.8	0	0	4.9	0	0	5.1	0	*	4.8	0	*	4.8	0	*	4.7	0	0	4.6	0	0	4.8	0	0.2	4.8
Q6013	5.2	4.5	5.2	5.2	4.5	5.2	5.2	4.5	0	5.2	4.5	5.1	5.2	4.5	5.2	5.2	4.5	5.1	5.2	4.5	5.1	5.2	4.5	5.1	5.2	4.5	5.2
Q6014	5.1	5.2	0	5.0	5.2	0	5.0	5.1	5.2	5.0	5.2	0	5.0	5.1	0	5.0	5.1	0/	5.0	5.1	0	5.0	5.2	0	5.0	5.2	0
Q6015	0	0	5.2	0	0	5.2	0	0	0.5	0	0	5.2	0	0	5.2	0	0	5.2	0	0	5.2	0	0	5.2	0	0	5.2
06016	0	0	0.5	0	0	0.5	0	0	0	0	0	0.5	0	0	0.5	0	0	0.5	0	0	0.5	0	0	0.5	0	0	0.5
06017	0.6	0.5	0	0.5	0.5	0	0.5	0.5	12.9	0.6	0.5	0	0.6	0.5	0	0.6	0.5	0	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0
Q6018	0	0	13.0	0	0	12.9	0	0	12.9	0	0	13.0	0	0	12.9	0	0	12.9	0	0	12.9	0	0	12.9	0	0	12.9
06019	0	0	13.0	0	0	12.9	0	0	0	0	0	13.0	0	0	12.9	0	0	12.9	0	0	12.9	0	0	12.9	0	0	12.9
06020	0	0.6	0	0	0.6	0	0	0.6	5.1	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0
06021	0	0	5.2	0	0	5.2	0	0	12.9	0	0	5.2	0	0	5.1	0	0	5.1	0	0	5.2	0	0	5.1	0	0	5.2
06022	0.2	0.5	13.0	0.1	0.5	12.9	0.1	0.5	12.6	0.2	0.6	12.9	0.1	0.6	12.9	0.1	0.6	12.9	0.1	0.5	12.9	0.1	0.5	12.9	0.2	0.6	12.9
06023	13.0	12.9	12.7	12.9	12.9	12.6	12.9	12.9	12.9	12.9	12.9	12.6	12.9	12.9	12.6	12.9	12.9	12.6	12.9	12.9	12.6	12.9	12.9	12.6	12.9	12.9	12.6
06024	13.0	12.7	13.0	12.6	12.6	12.9	12.9	12.6	5.0	12.9	12.6	12.9	12.9	12.6	5.0	12.9	12.6	12.9	12.9	12.6	12.9	12.9	12.6	12.9	12.9	12.6	12.9
06025	0	0	5.0	0	0	5.0	0	0	0	0	0	5.0	0	0	8.6	0	0	5.0	. 0	0	5.0	0	0	5.0	0	0	5.0
06026	0	0	8.6	0	0.6	0	0	0.6	9.0	0	0	8.7	0	0	1.8	0	0.6	0	0	0.6	0	0	0	8.6	0	0	8.0
06027	9.1	9.0	1.9	9.1	8.3	9.0	8.3	9.1	7.7	9.0	9.1	1.9	9.1	9.0	9.0	9.1	8.3	9.0	9.1	8.3	9.0	9.1	9.0	1.8	9.0	9.1	1.8
Q6028 Q6029	0	0	9.1	9.1	8.6	7.6	0	0	4.6	0	0	9.1	0	0	*	0	0	7.7	0	0	7.7	0	0	9.0	0	0	9.0
Q6030	9.1	9.1	1.3	0.1			9.1	8.7	12.9	9.1	9.1	*	9.1	9.0	12.9	9.1	8.7	4.8	9.1	8.7	4.6	9.1	9.0	0	9.1	9.0	*
Q6031	5.2	5.2	0	5.2	0.1	12.9	-	0.1	0	1.0	*	12.9	*	*	0	0	0.1	12.9	0	0	12.9	*	*	12.9	*	*	12.9
06032	5.2	_	0	5.2	★	0	5.1	5.1	0	5.2	5.1	0	5.2	5.1	0	5.2	5.1	0	5.2	5.1	0	5.2	5.1	0	5.2	5.1	0
06033	5.2	5.2	0	5.2	5.1	0	5.2	5.1	0	5.2	5.1	0	5.2	5.1	0	5.2	5.1	0	5.2	5.1	0	5.2	5.1	0	5.2	5.1	0
Q6034	5.2	5.0	0	5.2	5.1	0	5.2	0.1	0	5.2	5.2	0	5.2	5.1	0	5.2	5.1	0	5.2	5.1	0	5.2	5.1	0	5.2	5.1	0
Q6035	5.2	5.0	- 0.1	5.2	5.0	1.3	5.2	5.0	0	5.2	5.0	0	5.2	5.0	0	5.2	5.0	0	5.2	5.0	0	5.2	5.2	0	5.2	5.0	0
Q6036	0.2	0	4.7	0	0	4.7	0	0	4.7	0	5.0	1.3	5.2	5.0	1.2	5.2	5.0	1.2	5.2	5.0	0	5.2	5.0	0	5.2	5.0	1.3
Q6037	0	0	4.7	0	0	4.7	0	0	4.7	0	0.6	2.6	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0	0	6.0	0
Q6039	0	0.6	0	0	0.6	0	0	0.6	0	-0	0.0			0	0.4	0	0	0.3	0	0	0.4	0	0	0.3	0	0	0.3
Q6040	0	0.3	0	0	0.0	0	0	0.0	0	0	0,3	4.3	0	0.3	4.4	0	0	4.4	0	0	4.4	0	0	4.0	0	0	4.0
06041	0	0.0	10.9	0	0.2	10.8	0	0.2	10.8	0	0.3	3,8	0	0.3	3.8	0	0.3	0	0	0.3	10.0	0	0	4.0	0	0.3	0
300			10.0		U	10.0			10.0	U	U U	3.0	U	U	3.8	U	0	3.8	0	0	10.9	0	0	10.8	0	0	10.8

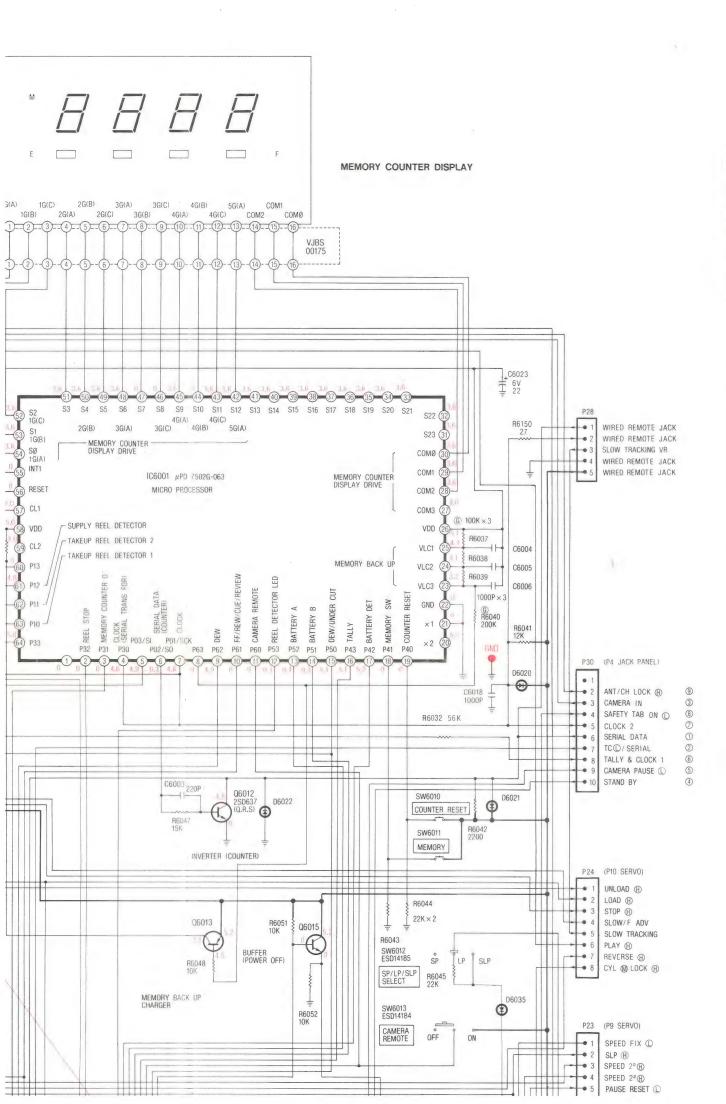
SYSTEM CONTROL & MEMORY COUNTER C.B.A. (VEPS0648A)

THE VOLTAGE MEASUREMENTS GIVEN IN THIS DRAWING ARE COLOR BAR SIGNAL IN SP-REC MODE.





SYSTEM CONTROL & MEMORY COUNTER SCHEMATIC DIAGRAM THE VOLTAGE MEASUREMENTS GIVEN IN THIS DRAWING ARE COLOR BAR SIGNAL IN SP-REC 3G(A) 2G(C) 1G(C) 2 1G(B) 2G(A) 5G(A) 3G(B) 4G(A) 4G(C) CH UP/ANTENNA VOLTAGE SELECT (P8 A.V.R.) P22 REF 900KHz REF 180KHz SAFETY TAB R6126 Q6036 100K EE (I R6129 Q6037 100K Q60 EJECT STOP FF REW PLAY AUDIO DUB FULL ERASE (H) REC ① SW6001 R6140 56K AUDIO REC (H) 10. D6017 DELAY REC (H) D6009 D6011 D6012 D6014 D6015 D6016 1 **(4) (1) (1)** 1 **((4)** 1 (SAFETY TAB SW) S7 S8 S9 S10 S11 S12 S13 S14 S15 S16 GND K 4G(A) 4G(C) PLAY (1) 3G(A) 3G(C) 4G(B) IC6001 µPD 7502G-063 MICRO PROCESSOR LED DRIVERS R6050 22K 5 Q6014 C -SUPPLY REEL DETECTOR VDD IC6001 ⑤ STOP. 2V/2μsec. div. MA27WA - TAKEUP REEL DETECTOR 2 1 D6031LN28CAL R6023 56K 06005 Q6006 Q6007 ≥ SLOW 95.1 R6005 22K R6015 22K R6024 56K R6017 R600? R6010 } R6025 56K R6019 47K ₹**⊕** 06007 R6016 56K **Ф** WD. ≥ ④ 06008 REW D6006 AUDIO DOB PLAY Q6011 D6019 PAUSE D6003 STOP R6014 560 1 50V MICRO PROCESSOR RESET 50V_+ R 6034 5600 R6033 5600 INVERTER (COUNTER) D04 D03 D02 D01 D00 Q6034 Q6035 UNLOADING R6123 22K B6120 22 Q6010 INVERTER Q6013 R6051 IC 6002 MN1455AVA IC6003 MN1455AVB MICRO PROCESSOR STOP-EJECT BUFFER (POWER OFF) D CO11 AUDIO EE MEMORY BACK UP CHARGER R6114 R6113 42 CO8 CO7 CO6 CO5 CO4 CO3 CO2 CO1 COØ AI3 AI2 R6112 22K×4





	P21 (SYSTEM CONT	TROL & MEMORY COUNTER C.B.A.)	
PIN NO.	SIGNAL NAME	DESTINATION	
1	AUDIO EE (H)	P7-1 A.V.R. C.B.A.	
2	AUDIO MUTING (H)	P7-2 A.V.R. C.B.A.	
3	CURRENT EMPHA (P7-3 A.V.R. C.B.A.	
4	POWER OFF (H)	P7-4 A.V.R. C.B.A.	
5	+5V	P7-5 A.V.R. C.B.A.	
6	+9V	P7-6 A.V.R. C.B.A.	
7	+12V	P7-7 A.V.R. C.B.A.	
8	GND	P7-8 A.V.R. C.B.A.	

	P22 (SYSTEM CON	ITROL & MEMORY COUNTER C.B.A.)	
PIN NO.	SIGNAL NAME	DESTINATION	
1	REF 900KHz	P8-1 A.V.R. C.B.A.	
2	REF 180KHz	P8-2 A.V.R. C.B.A.	
3	SAFETY TAB	P8-3 A.V.R. C.B.A.	
4	EE ①	P8-4 A.V.R. C.B.A.	
5	FULL ERASE (H)	P8-5 A.V.R. C.B.A.	
6	REC ①	P8-6 A.V.R. C.B.A.	
7	AUDIO REC (H)	P8-7 A.V.R. C.B.A.	
8	DELAY REC (H)	P8-8 A.V.R. C.B.A.	

P23 (SYSTEM CONTROL & MEMORY COUNTER C.B.A.)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	SPEED FIX	P9-1 SERVO C.B.A.	
2	SLP (H)	P9-2 SERVO C.B.A.	
3	SPEED 2" H	P9-3 SERVO C.B.A.	
4	SPEED 2" (H)	P9-4 SERVO C.B.A.	
5	PAUSE RESET (P9-5 SERVO C.B.A.	
6	SPEED 2 A	P9-6 SERVO C.B.A.	
7	SP/LP/SLP	P9-7 SERVO C.B.A.	
8	INSERT (P9-8 SERVO C.B.A.	

P24 (SYSTEM CONTROL & MEMORY COUNTER C.B.A.)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	UNLOAD (H)	P10-1 SERVO C.B.A.	
2	LOAD (H)	P10-2 SERVO C.B.A.	
3	STOP (H)	P10-3 SERVO C.B.A.	
4	SLOW/FADV	P10-4 SERVO C.B.A.	
5	SLOW TRACKING	P10-5 SERVO C.B.A.	
6	PLAY (H)	P10-6 SERVO C.B.A.	
7	REVERSE (H)	P10-7 SERVO C.B.A.	
8	CYL M LOCK H	P10-8 SERVO C.B.A.	

	P25 (SYSTEM CON	ITROL & MEMORY COUNTER C.B.A.)
PIN NO.	SIGNAL NAME	DESTINATION
1	MEMORY BACKUP	P38-1 SUB SYSTEM CONTROL C.B.A.
2	DEW SENSOR	P38-2 SUB SYSTEM CONTROL C.B.A.
3	TAKEUP PHOTO TR	P38-3 SUB SYSTEM CONTROL C.B.A.

4-15 SYSTEM CONTROL & MEMORY COUNTER SCHEMATIC DIAGRAM

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATIC DIAGRAM.

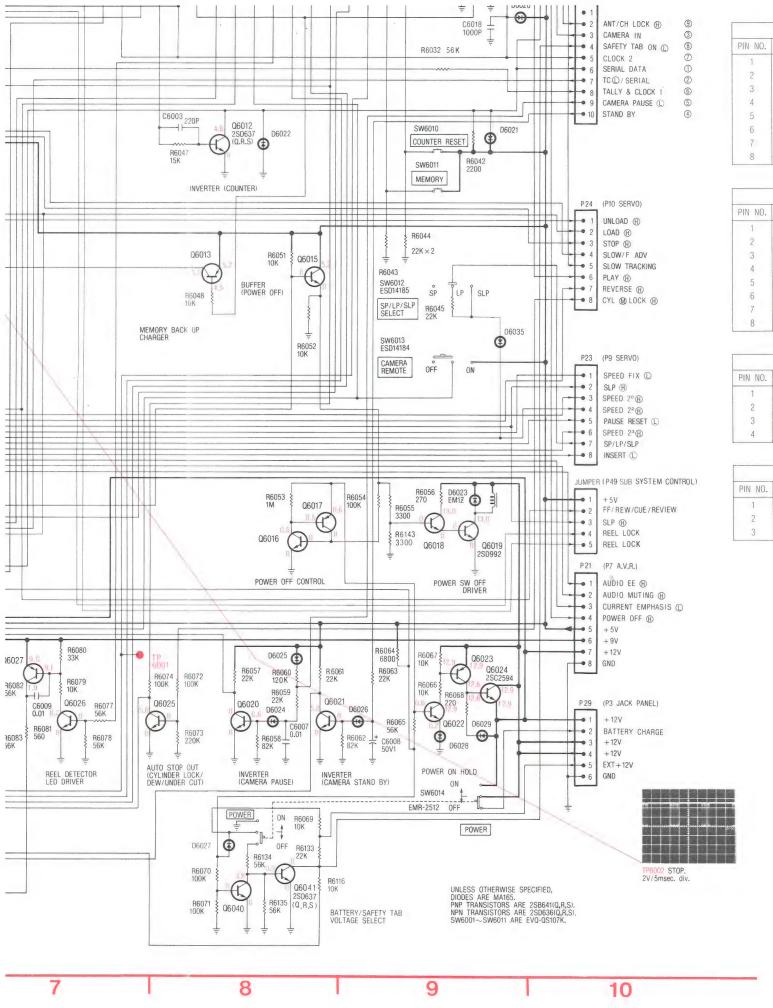
P27 (SYSTEM CONTROL & MEMORY COUNTER C.B.A.)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	MODE POSITION	P43-4 MODE SWITCH	
2	GND	P43-1 MODE SWITCH	
3	STOP POSITION	P43-2 MODE SWITCH	
4	TAKEUP REEL DETECT 1	P42-4 TAKEUP REEL DETECTOR C.B.A.	
5	GND	P42-2 TAKEUP REEL DETECTOR C.B.A.	
6	TAKEUP REEL DETECT 2	P42-1 TAKEUP REEL DETECTOR C.B.A.	
7	EJECT POSITION	P43-3 MODE SWITCH	
8	GND	P39-2 SUPPLY REEL DETECTOR C.B.A.	
9	REEL DETECTOR LED	P39-3 SUPPLY REEL DETECTOR C.B.A.	
10	SUPPLY REEL DETECT	P39-1 SUPPLY REEL DETECTOR C.B.A.	

P28 (SYSTEM CONTROL & MEMORY COUNTER C.B.A.)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	SERIAL DATA	4 WIRED REMOTE JACK C.B.A.	
2	CLOCK 2	2 WIRED REMOTE JACK C.B.A.	
3	SLOW TRACKING	SLOW TRACKING VR	
4	GND	3 WIRED REMOTE JACK C.B.A.	
5	+5V	1 WIRED REMOTE JACK C.B.A.	

P29 (SYSTEM CONTROL & MEMORY COUNTER C.B.A.)		
PIN NO.	SIGNAL NAME	DESTINATION
1	+ 12V	P3-1 JACK PANEL C.B.A.
2	BATTERY CHARGE	P3-4 JACK PANEL C.B.A.
3	+12V	P3-5 JACK PANEL C.B.A.
4	+12V	P3-6 JACK PANEL C.B.A.
5	EXT +12V	P3-2 JACK PANEL C.B.A.
6	GND	P3-3 JACK PANEL C.B.A.

P30 (SYSTEM CONTROL & MEMORY COUNTER C.B.A.)		
PIN NO.	SIGNAL NAME	DESTINATION
1		
2	ANT/CH LOCH (H)	P4-9 JACK PANEL C.B.A.
3	CAMERA IN	P4-3 JACK PANEL C.B.A.
4	SAFETY TAB ON ①	P4-8 JACK PANEL C.B.A.
5	CLOCK 2	P4-7 JACK PANEL C.B.A.
6	SERIAL DATA	P4-1 JACK PANEL C.B.A.
7	TC/SERIAL (P4-2 JACK PANEL C.B.A.
7	TALLY & CLOCK 1	P4-6 JACK PANEL C.B.A.
9	CAMERA PAUSE ①	P4-5 JACK PANEL C.B.A.
10	STAND BY	P4-4 JACK PANEL C.B.A.

	JUMPER (SYSTEM CO	ONTROL & MEMORY COUNTER C.B.A.)
PIN NO.	SIGNAL NAME	DESTINATION
J	SAFETY TAB	P50-1 SAFETY TAB SWITCH C.B.A.
Κ .	GND	P50-2 SAFETY TAB SWITCH C.B.A.



P23 (SYSTEM CONTROL & MEMORY COUNTER C.B.A.)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	SPEED FIX	P9-1 SERVO C.B.A.	
2	SLP (H)	P9-2 SERVO C.B.A.	
3	SPEED 2° H	P9-3 SERVO C.B.A.	
4	SPEED 22 H	P9-4 SERVO C.B.A.	
5	PAUSE RESET (P9-5 SERVO C.B.A.	
6	SPEED 2 H	P9-6 SERVO C.B.A.	
7	SP/LP/SLP	P9-7 SERVO C.B.A.	
8	INSERT ①	P9-8 SERVO C.B.A.	

P24 (SYSTEM CONTROL & MEMORY COUNTER C.B.A.)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	UNLOAD (H)	P10-1 SERVO C.B.A.	
2	LOAD (H)	P10-2 SERVO C.B.A.	
3	STOP (H)	P10-3 SERVO C.B.A.	
4	SLOW/FADV	P10-4 SERVO C.B.A.	
5	SLOW TRACKING	P10-5 SERVO C.B.A.	
6	PLAY (H)	P10-6 SERVO C.B.A.	
7	REVERSE (H)	P10-7 SERVO C.B.A.	
8	CYL M LOCK H	P10-8 SERVO C.B.A.	

P25 (SYSTEM CONTROL & MEMORY COUNTER C.B.A.)			
PIN NO.	SIGNAL NAME	DESTINATION	
1	MEMORY BACKUP	P38-1 SUB SYSTEM CONTROL C.B.A.	
2	DEW SENSOR	P38-2 SUB SYSTEM CONTROL C.B.A.	
3	TAKEUP PHOTO TR	P38-3 SUB SYSTEM CONTROL C.B.A.	
4	SENSOR LED	P38-4 SUB SYSTEM CONTROL C.B.A.	

P26 (SYSTEM CONTROL & MEMORY COUNTER C.B.A.)				
PIN NO.	SIGNAL NAME	DESTINATION		
1	SUPPLY PHOTO TR	P41-2 SUPPLY PHOTO TR C.B.A.		
2	CASSETTE DOWN	P41-1 SUPPLY PHOTO TR C.B.A.		
3	CASSETTE UP	P41-3 SUPPLY PHOTO TR C.B.A.		

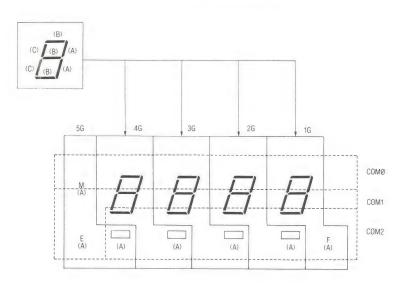
	P29 (SYSTEM CONTROL & MEMORY COUNTER C.B.A.)						
PIN NO.	SIGNAL NAME	DESTINATION					
1	+ 12V	P3-1 JACK PANEL C.B.A.					
2	BATTERY CHARGE	P3-4 JACK PANEL C.B.A.					
3	+ 12 V	P3-5 JACK PANEL C.B.A.					
4	+12V	P3-6 JACK PANEL C.B.A.					
5	EXT +12V	P3-2 JACK PANEL C.B.A.					
6	GND	P3-3 JACK PANEL C.B.A.					

	P30 (SYSTEM CONTROL & MEMORY COUNTER C.B.A.)						
PIN NO.	SIGNAL NAME	DESTINATION					
1							
2	ANT/CH LOCH (H)	P4-9 JACK PANEL C.B.A.					
3	CAMERA IN	P4-3 JACK PANEL C.B.A.					
4	SAFETY TAB ON ①	P4-8 JACK PANEL C.B.A.					
5	CLOCK 2	P4-7 JACK PANEL C.B.A.					
6	SERIAL DATA	P4-1 JACK PANEL C.B.A.					
7	TC/SERIAL ①	P4-2 JACK PANEL C.B.A.					
8	TALLY & CLOCK 1	P4-6 JACK PANEL C.B.A.					
9	CAMERA PAUSE (P4-5 JACK PANEL C.B.A.					
10	STAND BY	P4-4 JACK PANEL C.B.A.					

	JUMPER (SYSTEM CO	ONTROL & MEMORY COUNTER C.B.A.)
PIN NO.	SIGNAL NAME	DESTINATION
J	SAFETY TAB	P50-1 SAFETY TAB SWITCH C.B.A.
K	GND	P50-2 SAFETY TAB SWITCH C.B.A.

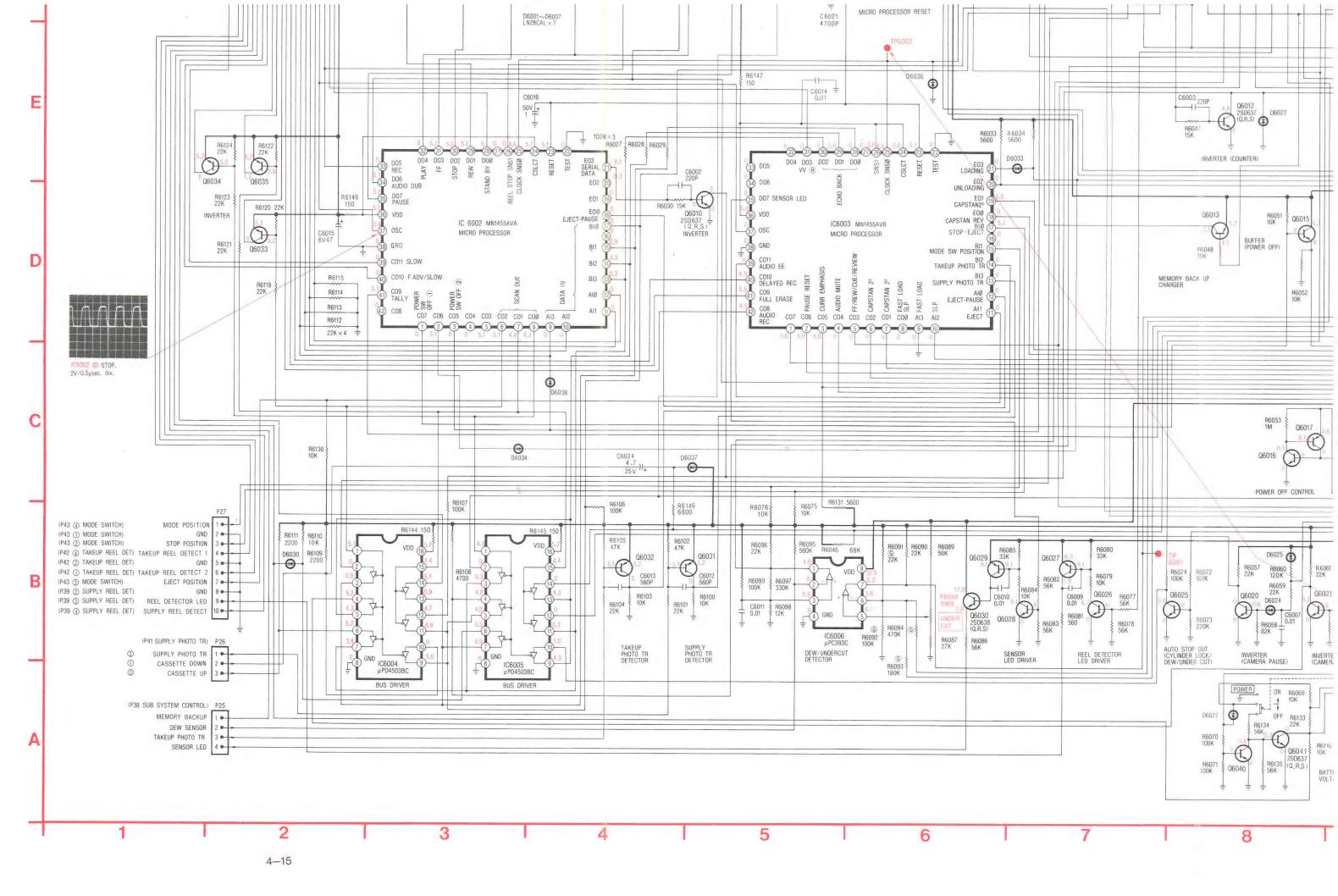
	JUMPER (SYSTEM CONTROL & MEMORY COUNTER C.B.A.)						
PIN NO.	SIGNAL NAME	DESTINATION					
1 2	+ 5V	P49-1 SUB SYSTEM CONTROL C.B.A.					
3	SLP (H)	P49-3 SUB SYSTEM CONTROL C.B.A.					
4	REEL LOCK	P49-4 SUB SYSTEM CONTROL C.B.A.					
5	REEL LOCK	P49-5 SUB SYSTEM CONTROL C.B.A.					

MEMORY COUNTER CONNECTION CHART

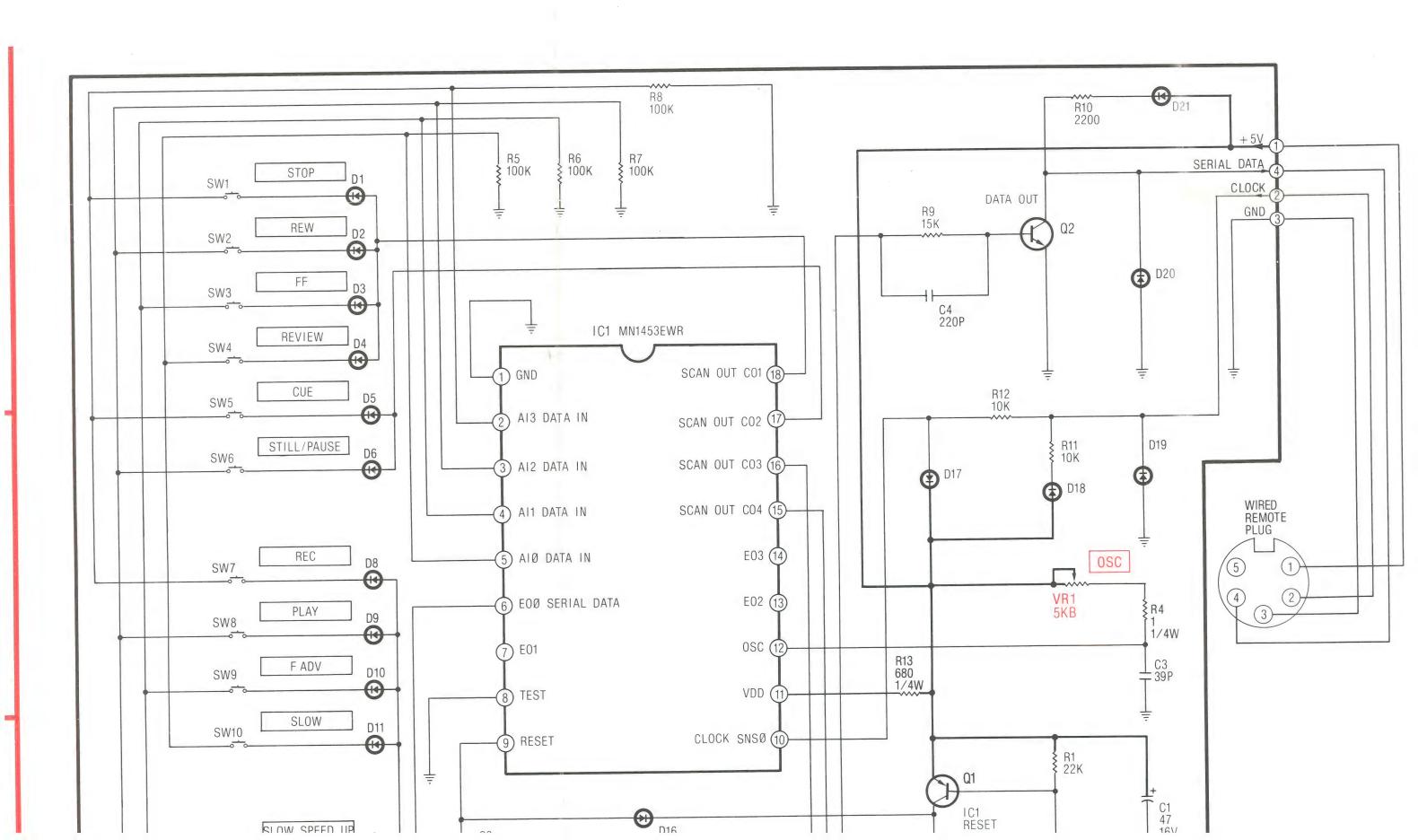


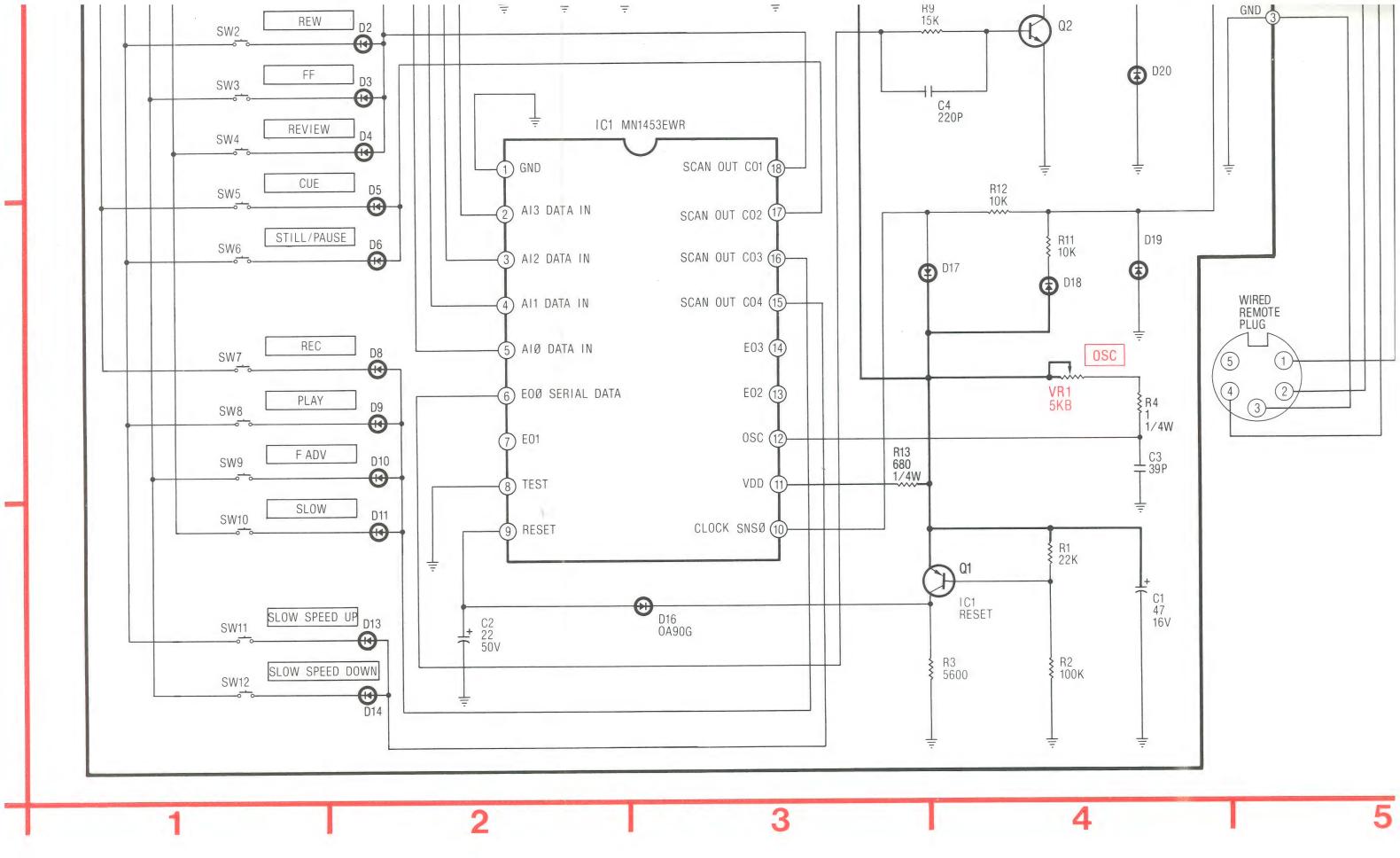
PIN NO.	1	2	3	4	5	6	7	8	9	10
SIGNAL NAME	1G(A)	1G(B)	1G(C)	2G(A)	2G(B)	2G(C)	3G(A)	3G(B)	3G(C)	4G(A)
PIN NO.	11	12	13	14	15	16				
SIGNAL NAME	4G(B)	4G(C)	5G(A)	COM2	COM1	COMO				

4-16 WIRED TRANSMITTER CIRCUIT

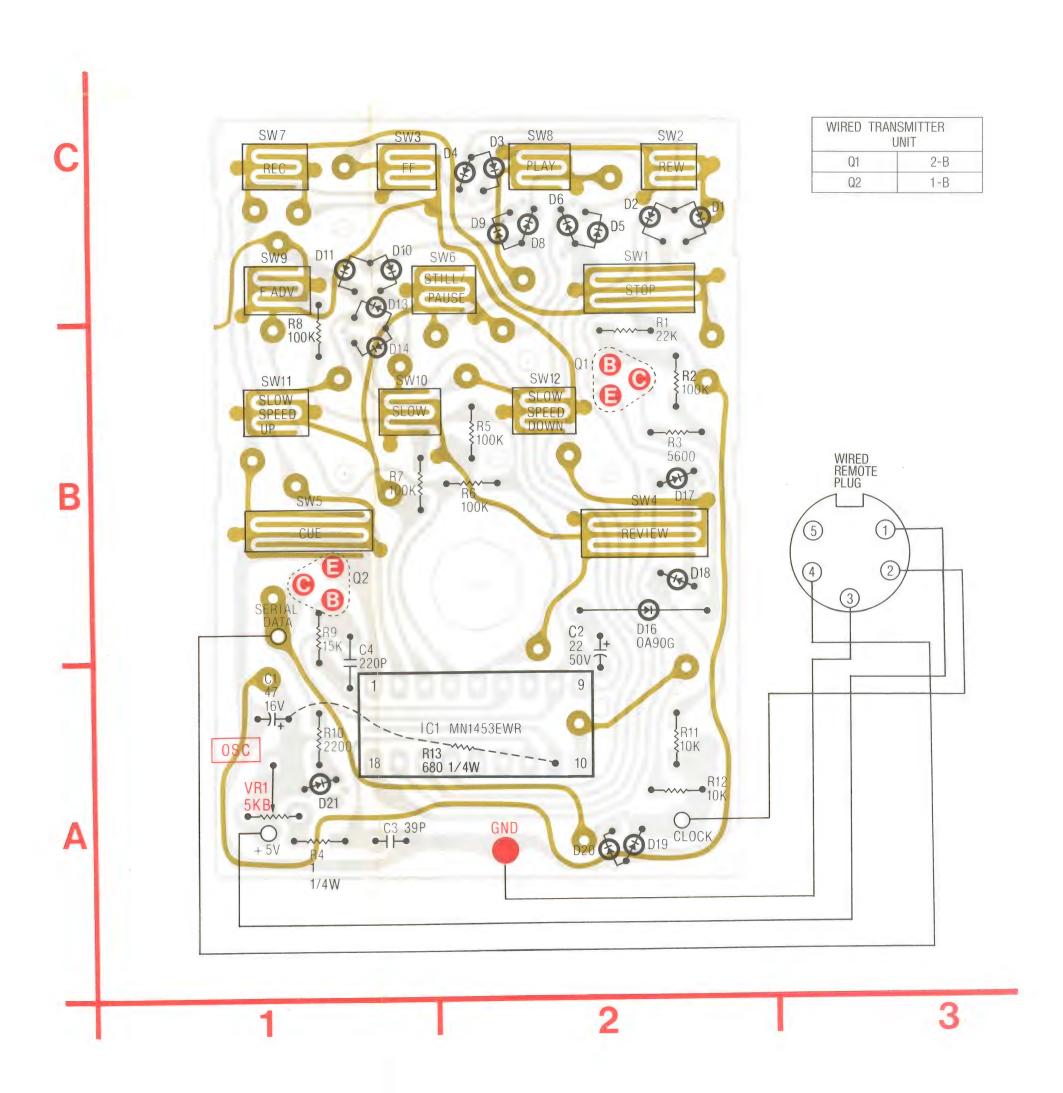


WIRED TRANSMITTER UNIT SCHEMATIC DIAGRAM



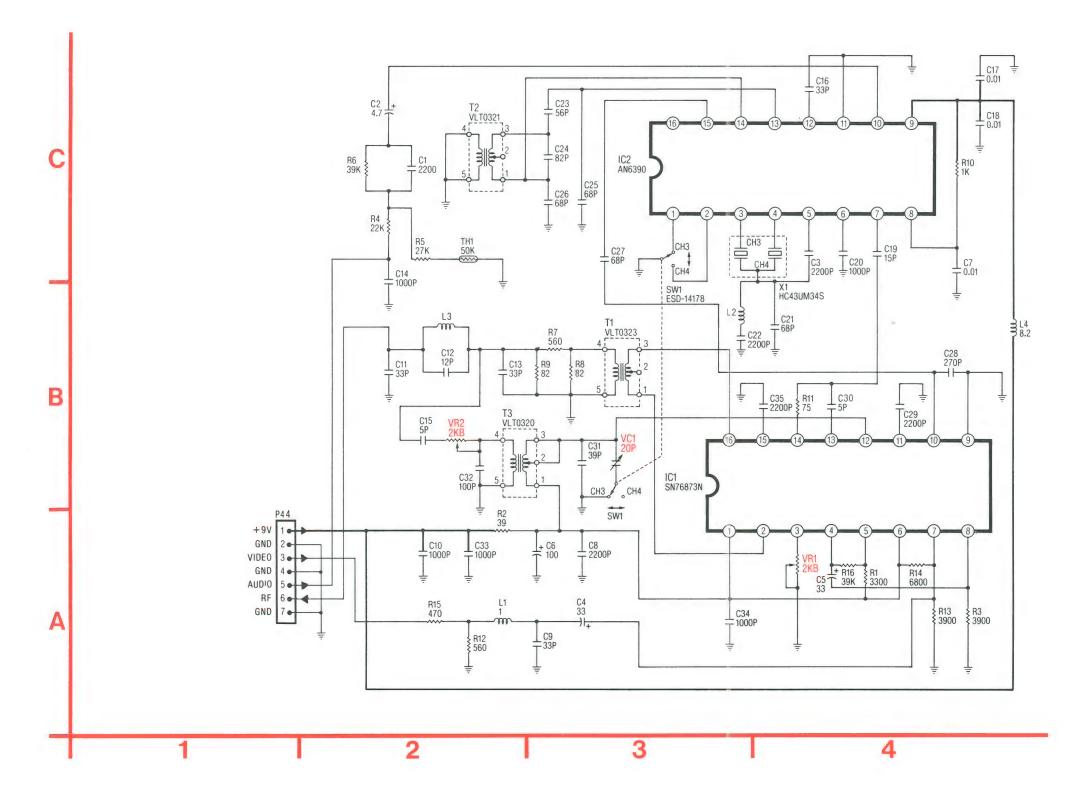


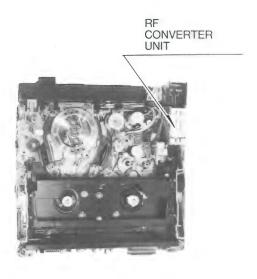
WIRED TRANSMITTER UNIT



RF CONVERTER UNIT SCHEMATIC DIAGRAM (ENC16501)

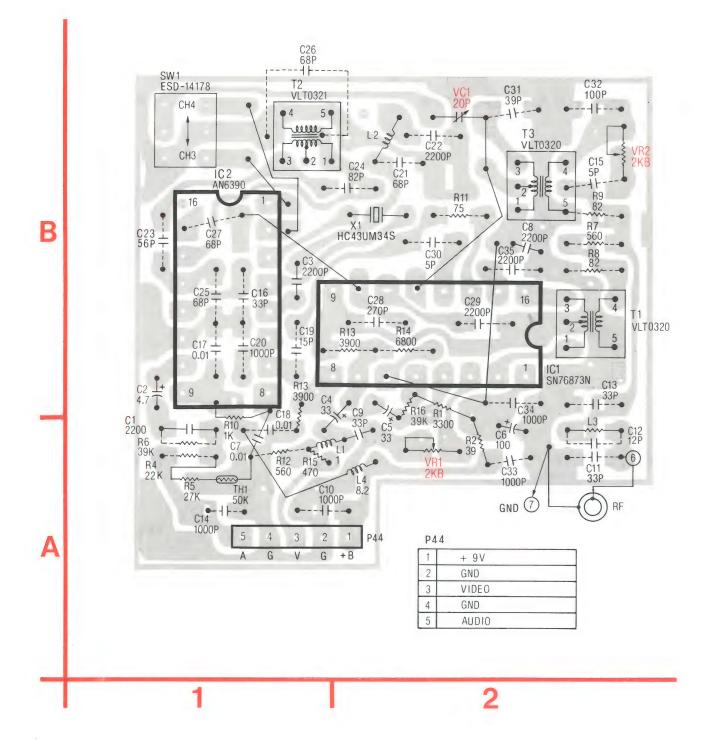
IMPORTANT NOTICE:
IF UNIT PARTS ARE REPLACED INDIVIDUALLY, THE FCC SPECIFICATIONS WILL NOT BE SATISFIED.
DURING SERVICING, PLEASE REPLACE AS A UNIT.





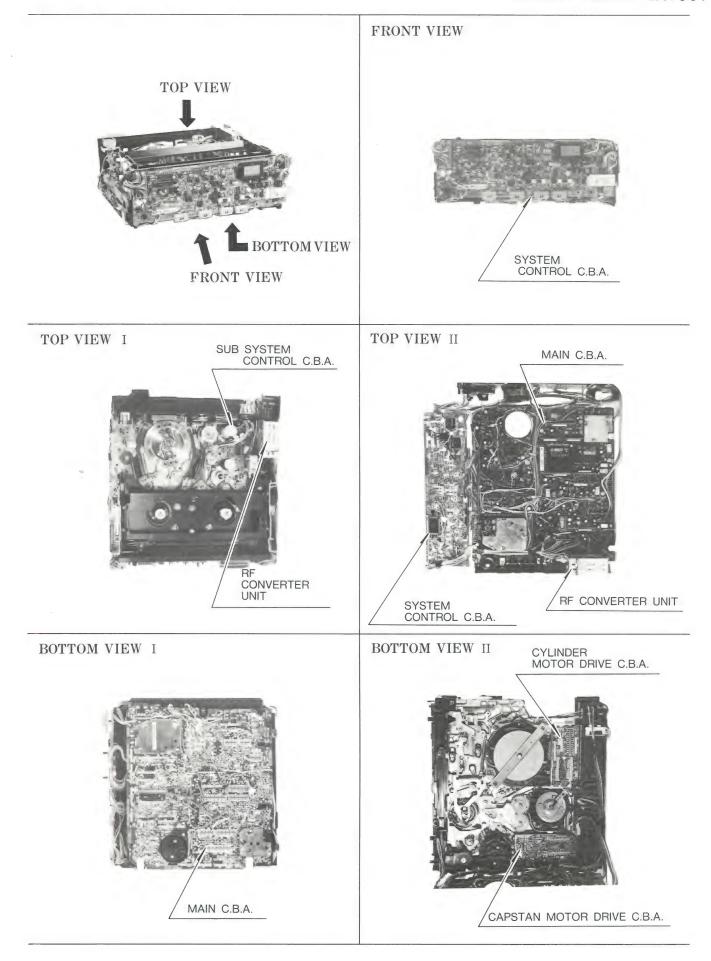
RF CONVERTER UNIT (ENC16501)

IMPORTANT NOTICE:
IF UNIT PARTS ARE REPLACED INDIVIDUALLY, THE FCC SPECIFICATIONS WILL NOT BE SATISFIED.
DURING SERVICING, PLEASE REPLACE AS A UNIT.

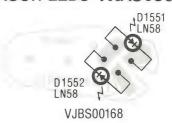


CIRCUIT BOARD LAYOUT

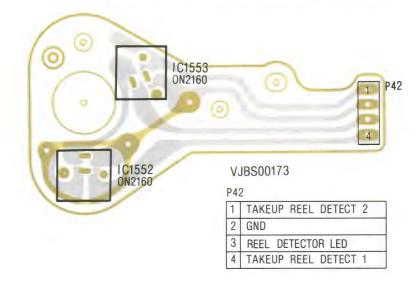
4-17 RF CONVERTER CIRCUIT CIRCUIT BOARD LAYOUT



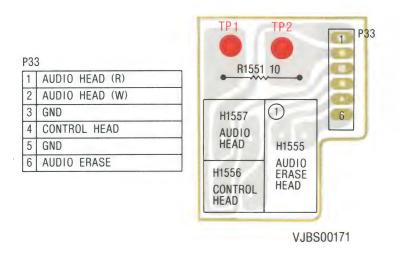
SENSOR LEDS VXAS0300



TAKEUP REEL DETECTOR C.B.A. VEPS00173



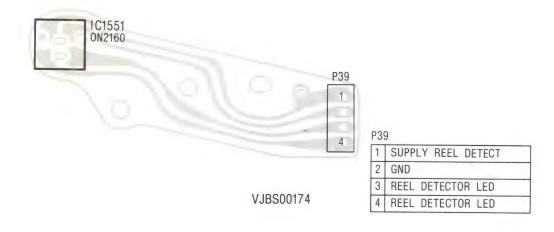
AUDIO/CONTROL HEAD VEHS0034



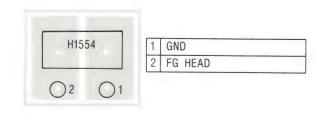
TAKEUP PHOTO TR C.B.A. VUPS0006



SUPPLY REEL DETECTOR C.B.A. VEPS00174



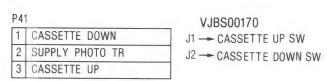
CAPSTAN FG HEAD VEPS00172A



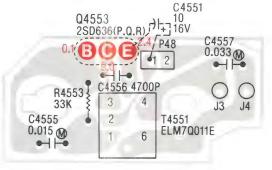
VJBS00172

SUPPLY PHOTO TR C.B.A. VUPS0007





FULL ERASE HEAD C.B.A. VEPS0408A



THE VOLTAGE MEASUREMENTS GIVEN IN THIS DRAWING ARE COLOR BAR SIGNAL IN SP-REC MODE.

P48

1 FULL ERASE
2 GND

	STOP			REC			PLAY		
	Е	В	C	E	В	C	E	В	C
Q4553	1.0	0.2	0.2	2.4	0.1	9.0	0	0	0

VOLTAGE MEASUREMENTS: COLOR BAR SIGNAL IN SP MODE.

SAFETY TAB SWITCH C.B.A. VEKS0881

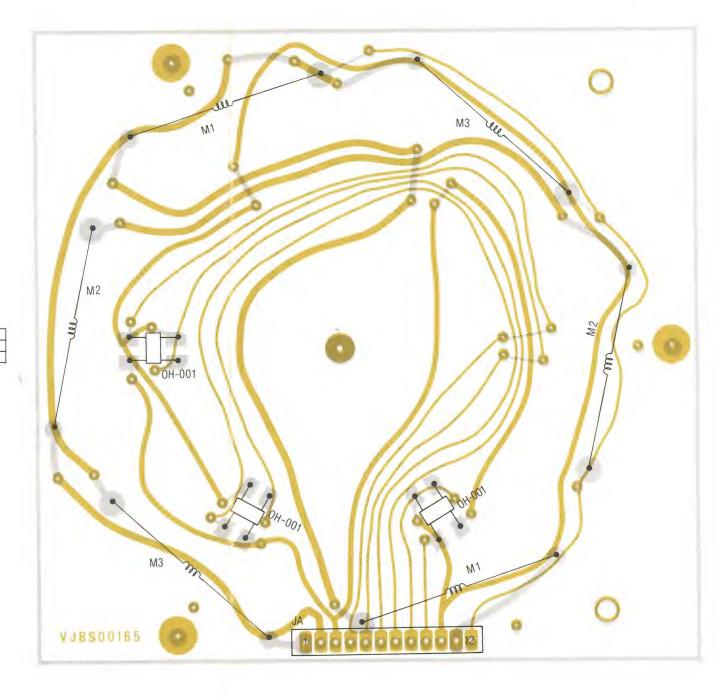
VJBS0408



P50	
1	SAFETY TAB
2	GND

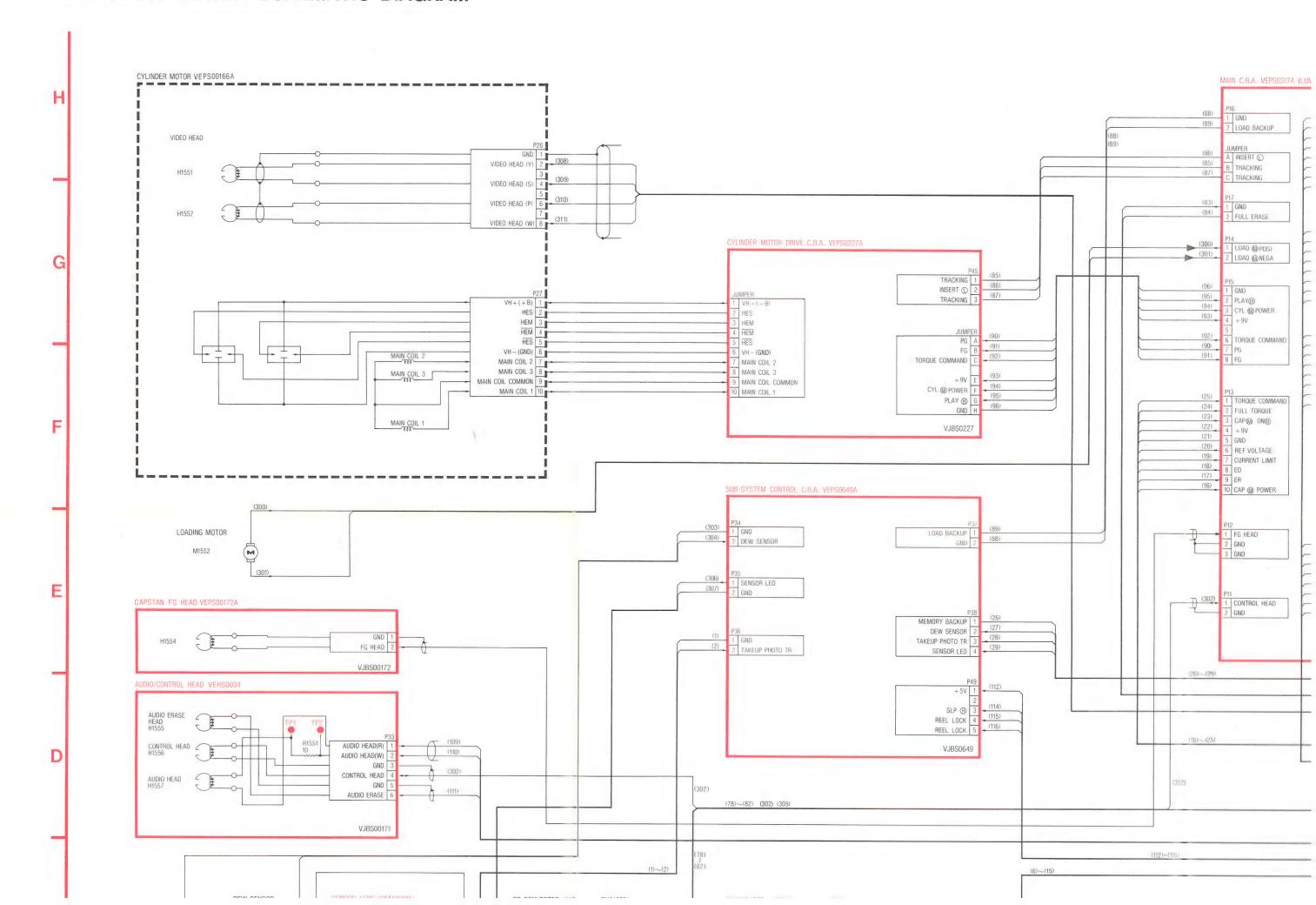
VJBS00206

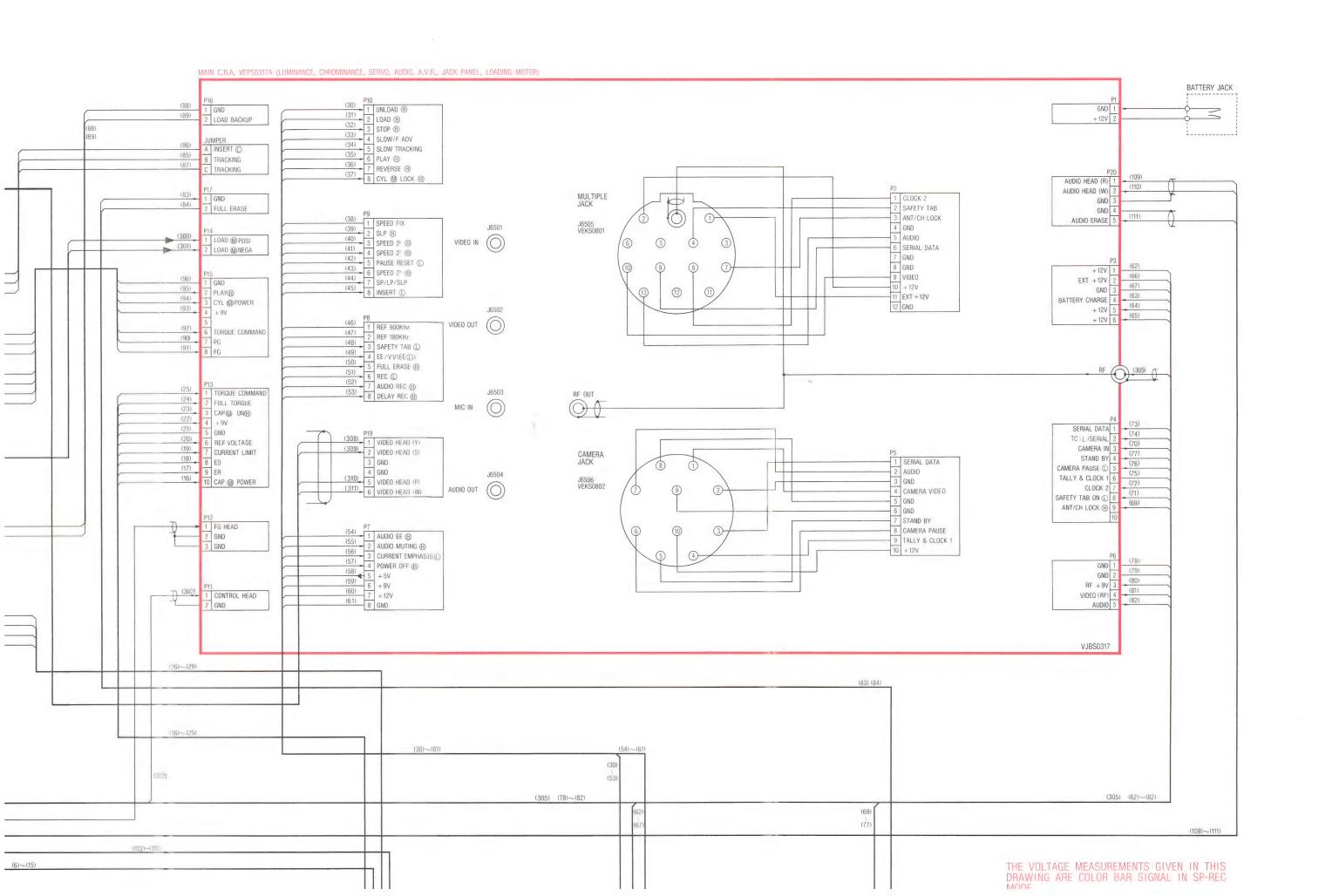
CAPSTAN STARTER COIL ASS'Y VEMSO025

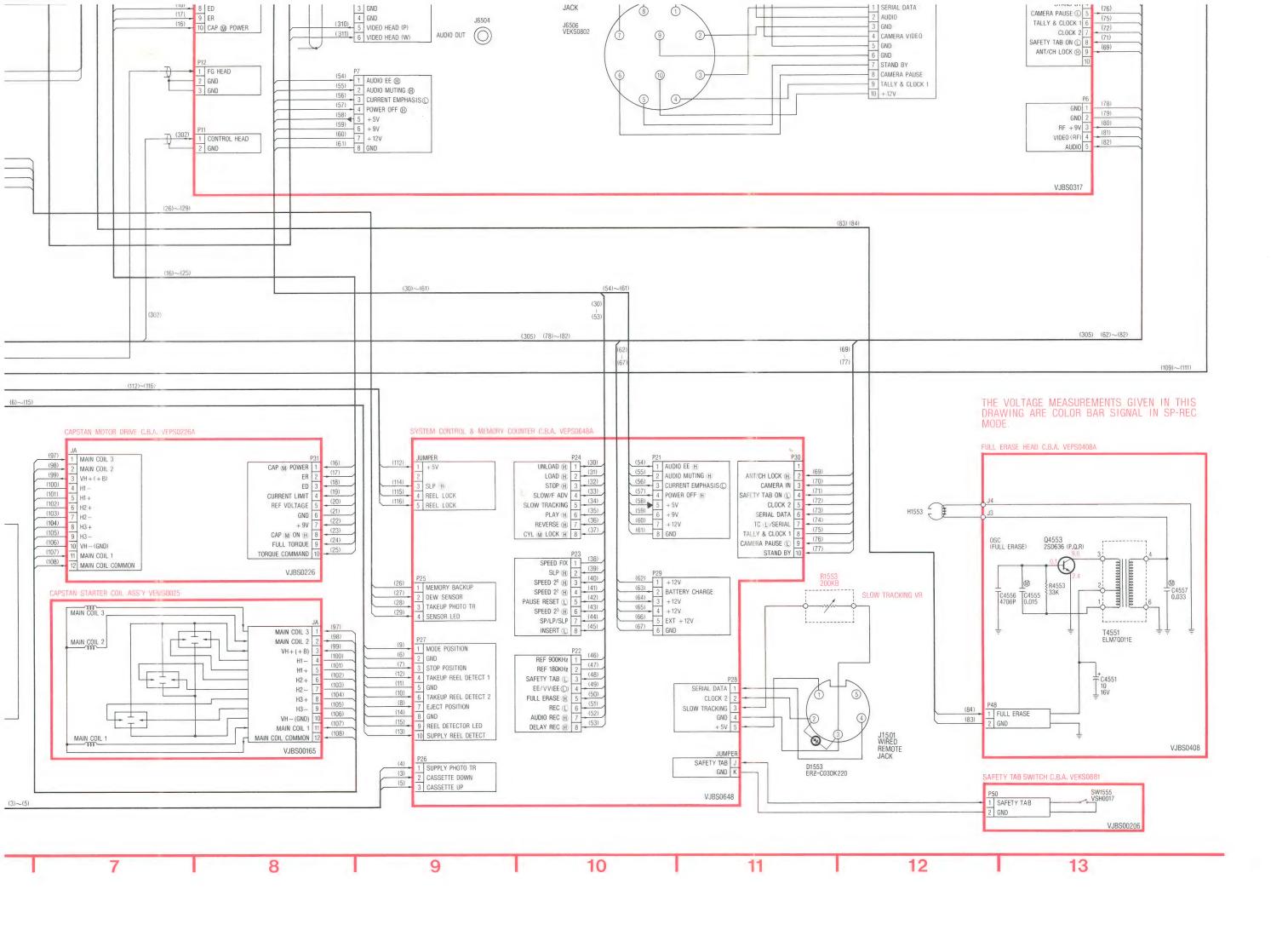


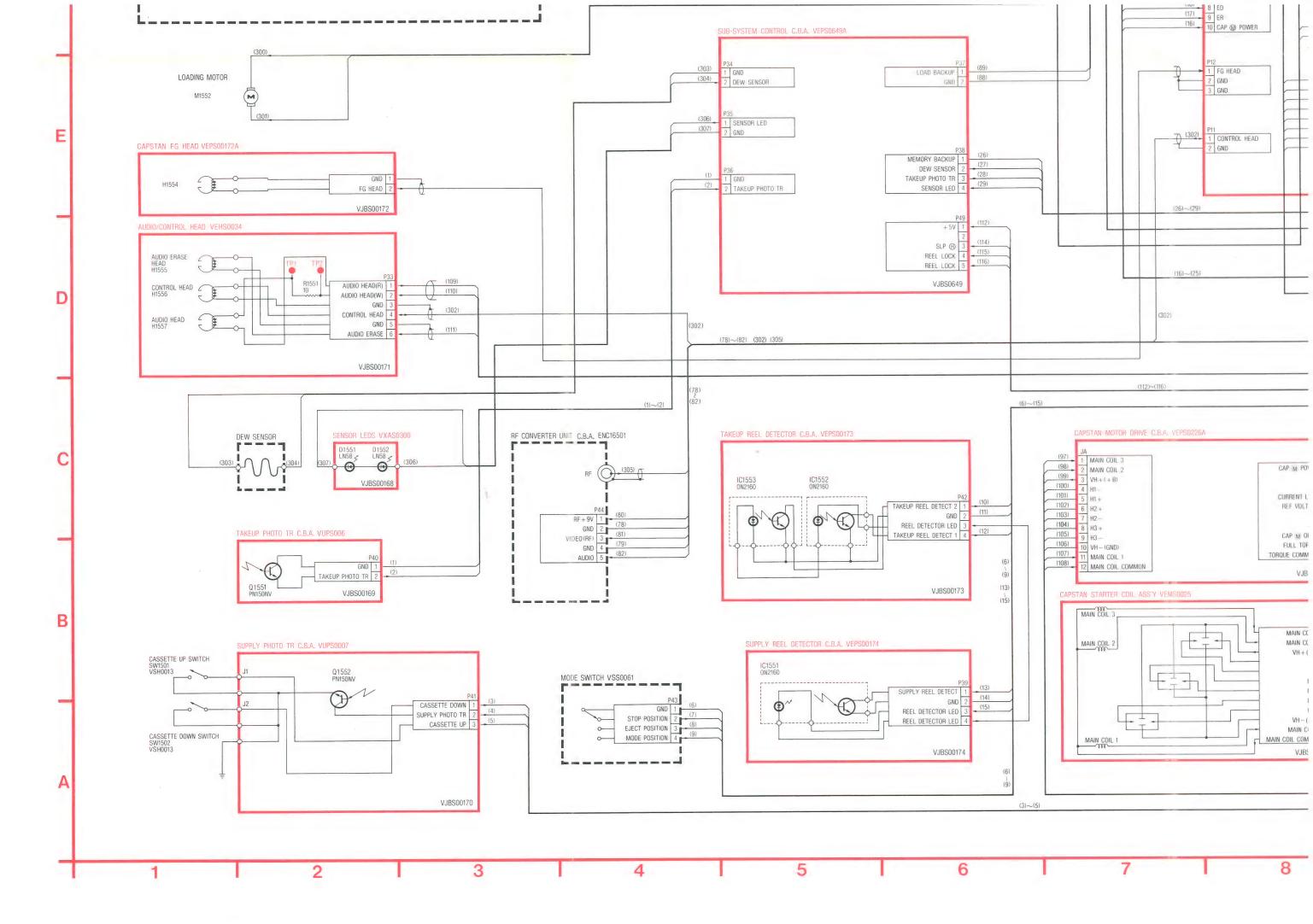
1 MAIN COIL 3 2 MAIN COIL 2 3 VH+(+B) 4 H15 H1+ 6 H2+ 7 H28 H3+ 9 H310 VH-(GND) 11 MAIN COIL 1 12 MAIN COIL COMMON

INTERCONNECTION SCHEMATIC DIAGRAM









Service Manual

Vol. 5

Exploded Views
Replacement Parts List

Panasonic VHS Omnivision PV-5000

Portable Video Cassette Recorder



SPECIFICATIONS

Power Source: 12VDC

Battery LCS-2012P Elec. Tuner Unit PV-A200 Prog. Tuner Unit PV-A500 Multiple AC Adaptor PV-A100 Plug-in AC Adaptor PV-A110

Power Consumption: Approx. 7W at Play mode
Television System: EIA Standard (525 lines, 60 fields)

NTSC color signal

Video Recording

System: 2 rotary heads helical scanning system

Luminance: FM azimuth recording Chrominance: Converted subcarrier phase shift recording

Audio Track: 1 track

Tape Format: Tape width 1/2" (12.7 mm), high density

tape

Tape Speed: SP mode: 1-5/16 i.p.s (33.35 mm/s)

LP mode: 21/32 i.p.s (16.67 mm/s) SLP mode: 7/16 i.p.s (11.12 mm/s) 360 min, with NV-T120 used in SL

Record/Playback Time: 360 min. with NV-T120 used in SLP

mode

FF/REW Time:

Less than 6 min. with NV-T120

Heads: Video: 2 Rotary heads

Audio/Control: 1 stationary head

Erase: 1 full track erase

1 audio track erase for audio

dubbing

Input Level: Video: VIDEO IN Jack (RCA type)

 $1.0\,\mathrm{Vp}$ -p, $75\,\Omega$ unbalanced

Audio: MIC IN Jack

 $-70\,dB$, 600Ω unbalanced

Output Level: Video: VIDEO OUT Jack (RCA type)

 $1.0\,\mbox{Vp-p},\,75\Omega$ unbalanced Audio: AUDIO OUT Jack (RCA type)

 $-6 \, dB$, 600Ω unbalanced

RF Modulated: Ch3/Ch4 switchable, $72 \, \mathrm{dB}_{\mu}$ (open voltage), $75 \, \Omega$ unbalanced

Video Horizontal

Resolution: More than 230 lines

Audio Frequency

Response: SP: $100 \text{ Hz} \sim 8 \text{ kHz}$, (10 dB down) LP: $100 \text{ Hz} \sim 6 \text{ kHz}$,

SLP: 150 Hz ~ 5 kHz

Signal-to-Noise Ratio: Video: SP mode: better than 40dB

LP mode: better than 40 dB SLP mode: better than 40 dB (Rohde & Schwarz noise meter) Audio: SP mode: better than 42 dB

LP mode: better than 40dB SLP mode: better than 40dB

Operating

Temperature: $32^{\circ}F \sim 104^{\circ}F (0^{\circ}C \sim 40^{\circ}C)$

Operating Humidity: 10% ~75%

Weight: 8.4 lbs (3.8 kg) (with internal battery pack)

Dimensions: $9-3/8 \text{ "(W)} \times 3-5/8 \text{ "(H)} \times 9-9/16 \text{ "(D)}$

 $238(W) \times 92.5(H) \times 242(D) mm$

Weight and dimensions shown are approximate. Specifications are subject to change without notice.

Panasonic₈

Panasonic Company Division of Matsushita Electric Corporation of America One Panasonic Way, Secaucus, New Jersey 07094

Panasonic Hawaii Inc. 91-238 Kauhi St. Ewa Beach P.O. Box 774 Honolulu, Hawaii 96808-0774

Panasonic Canada Division of Matsushita Electric of Canada Limited 5770 Ambler Drive, Mississauga Ontario, L4W 2T3 Panasonic Sales Company, Division of Matsushita Electric of Puerto Rico, Inc. Ave, 65 De Infanteria, KM 9.7 Victoria Industrial Park Carolina, Puerto Rico 00630

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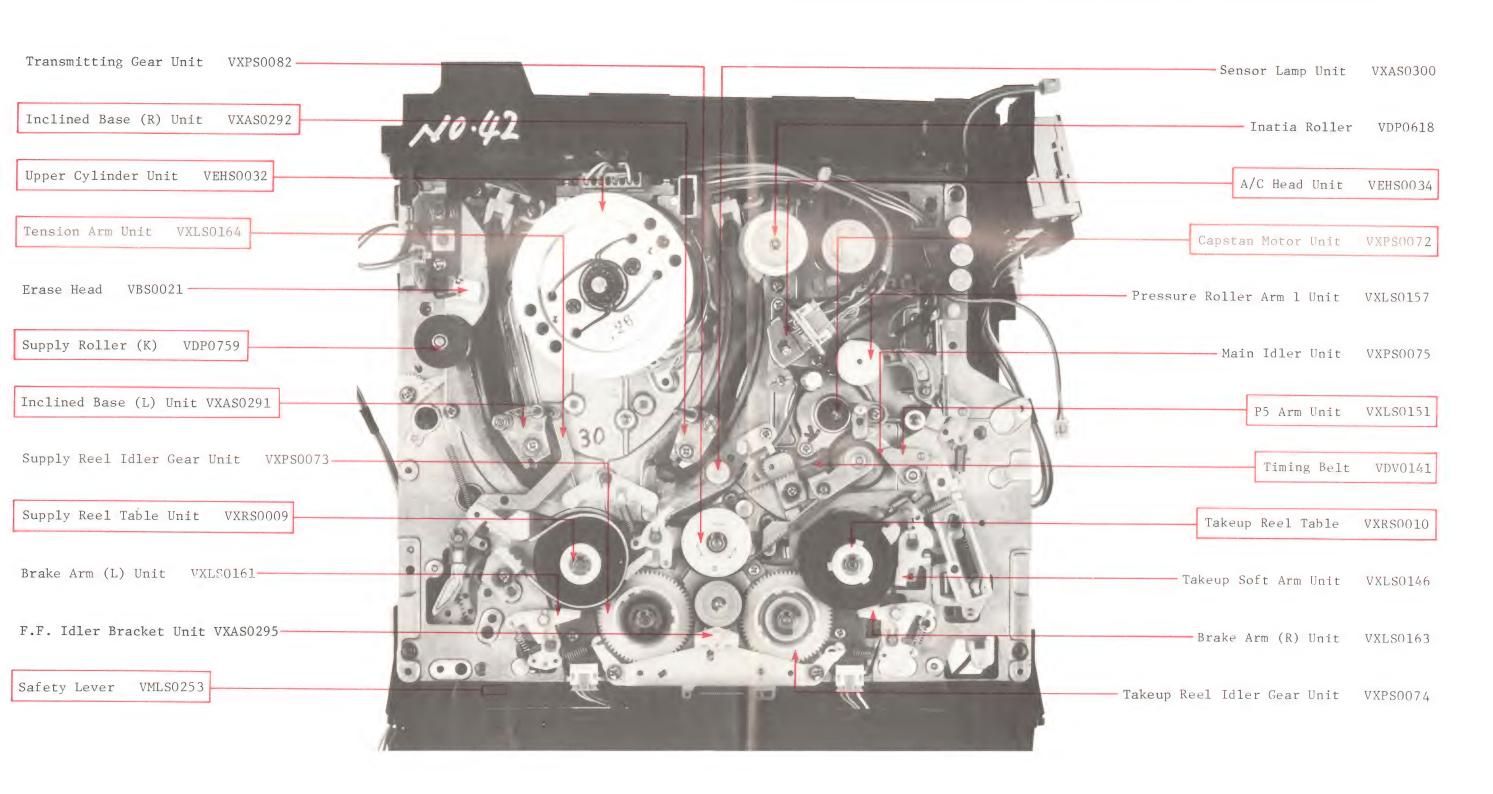
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INNER PARTS LOCATION

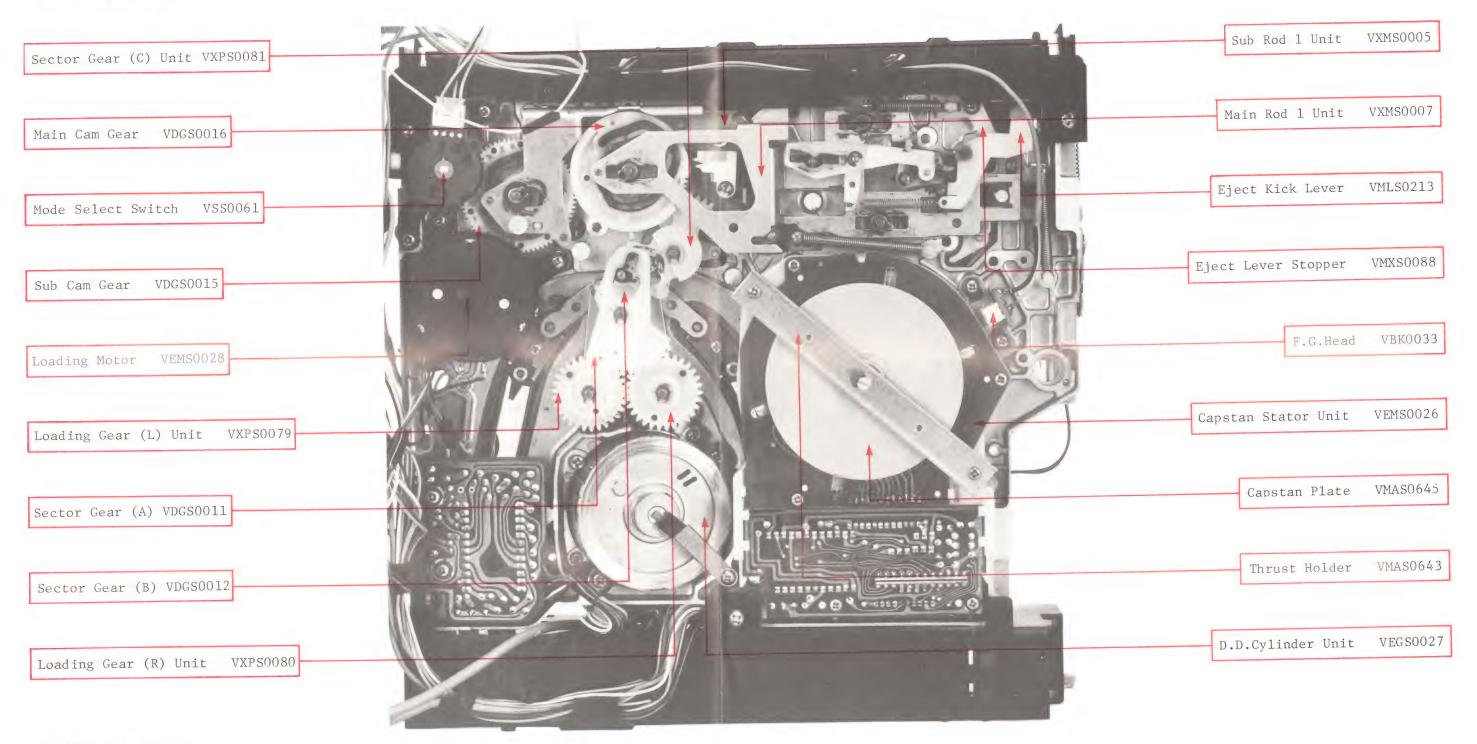
TOP VIEW

Note:

When the mechanical parts surrounded with rectangle were removed or replaced, be sure to perform necessary adjustment or confirmation procedures according to the mechanical adjustment procedures section.



BOTTOM VIEW

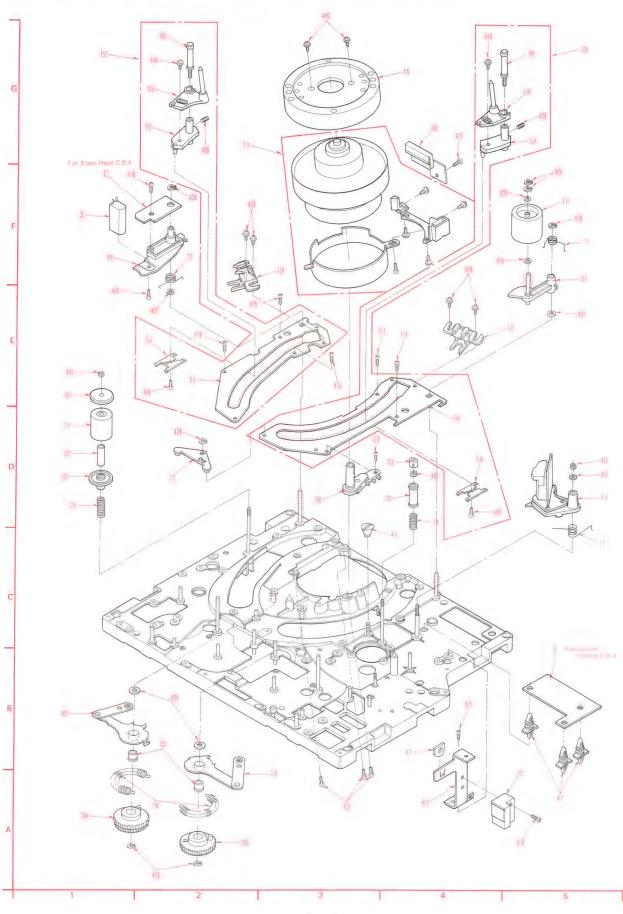


LUBRICATION POINTS

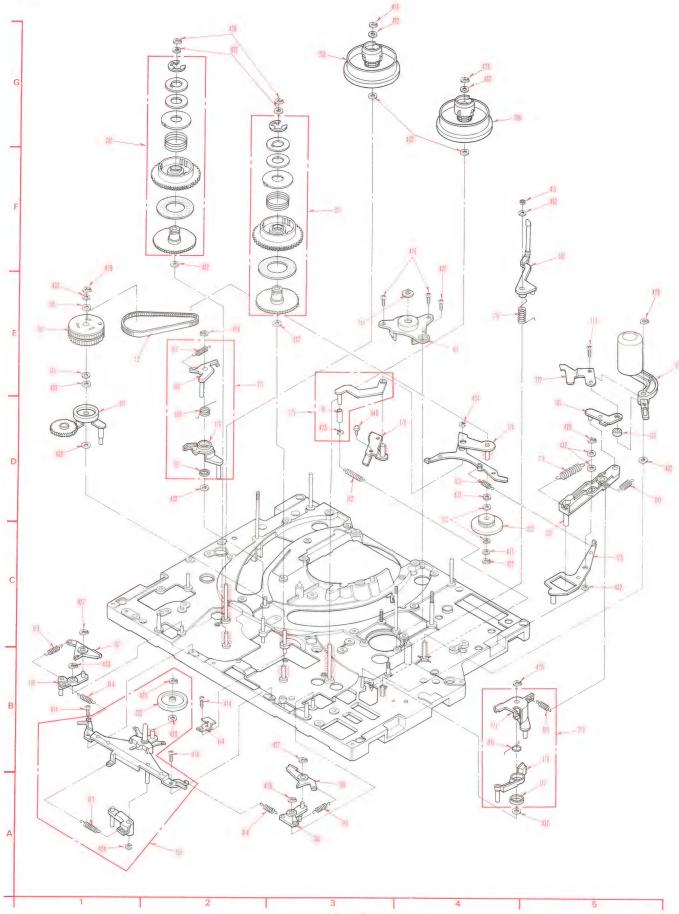
When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

Marks	Kind of Lubricant	Availability	Part Number
×××	Morlytone Grease	Available From Factory	MOR265
000	Spindle Oil	Purchase From Local Supplier	
ΔΔΔ	Gummed Adhesive	Purchase From Local Supplier	

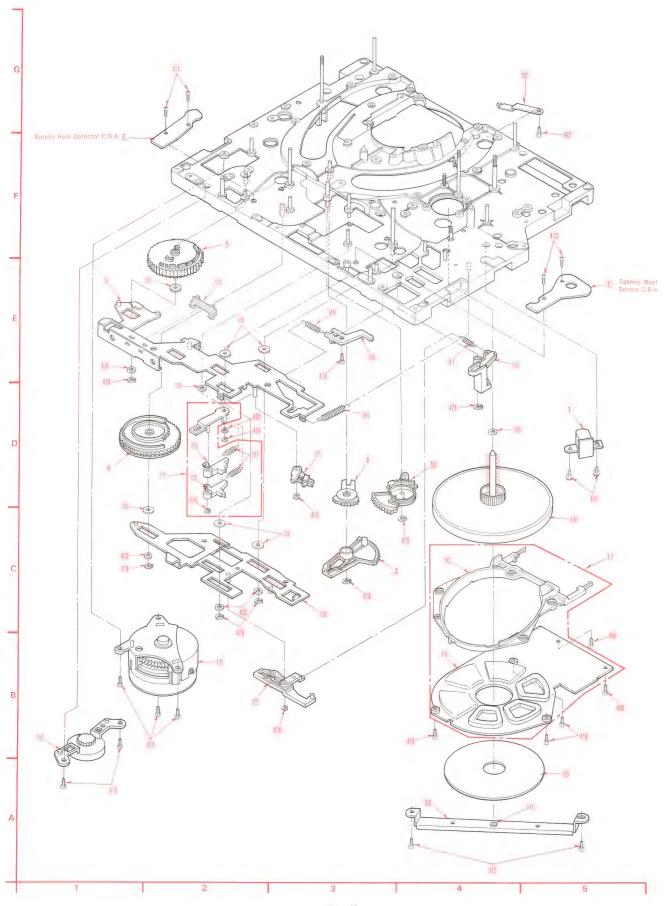
EXPLODED VIEW 1 Transport Section

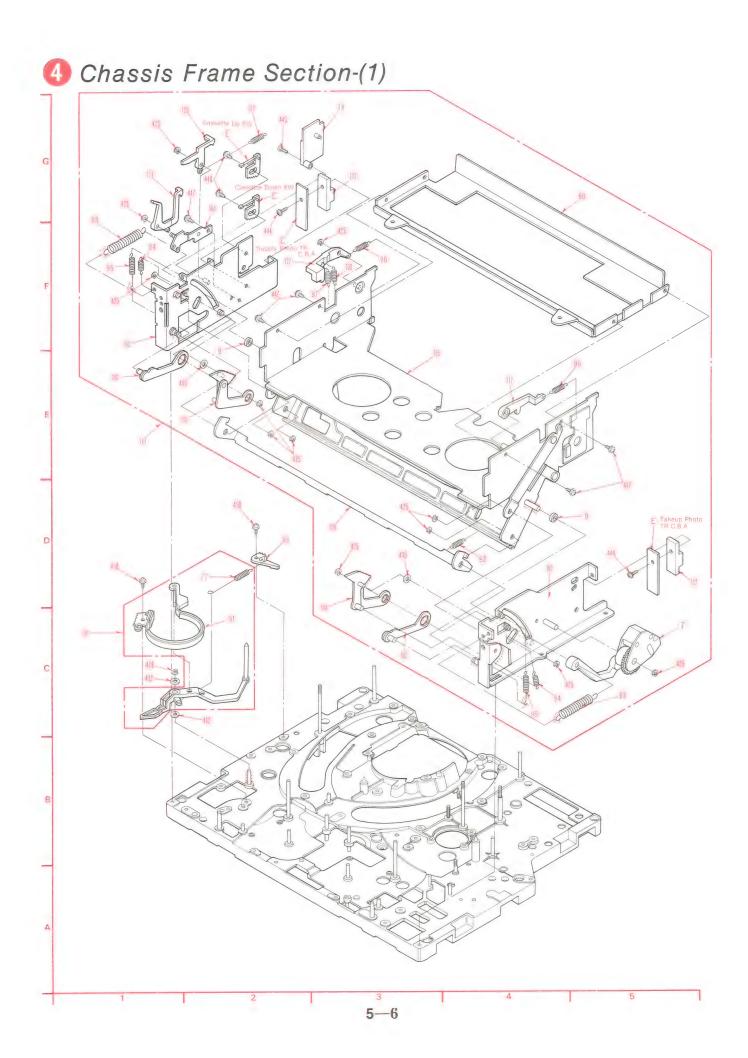


Moving Mechanism-(1)

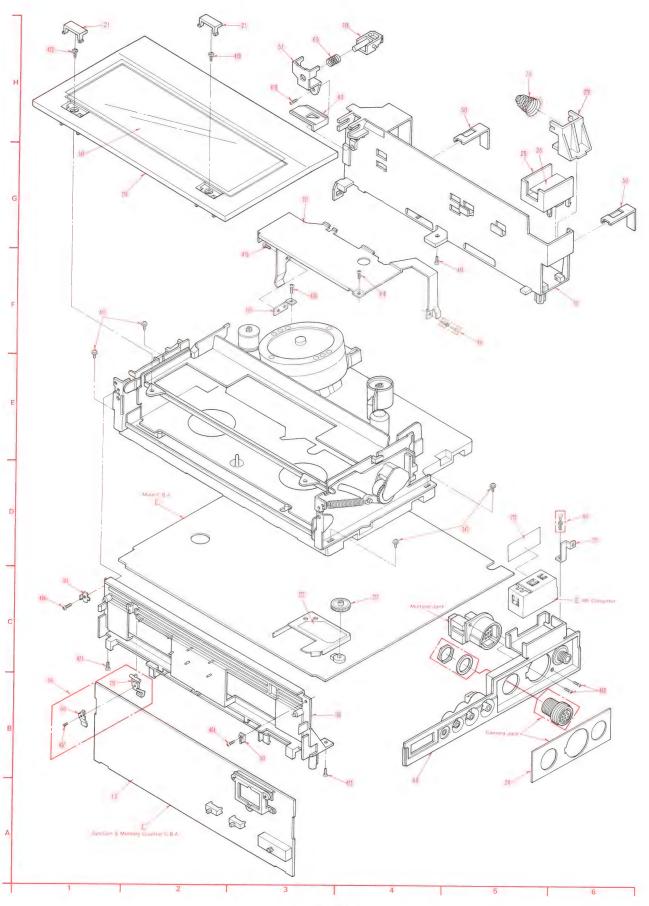


1 Moving Mechanism-(2)

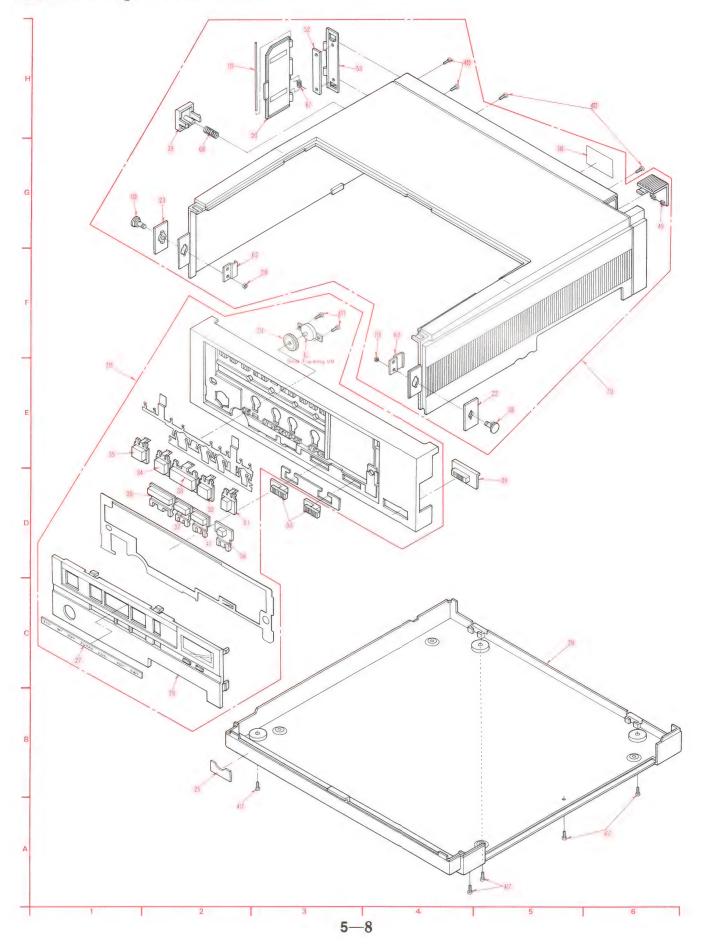




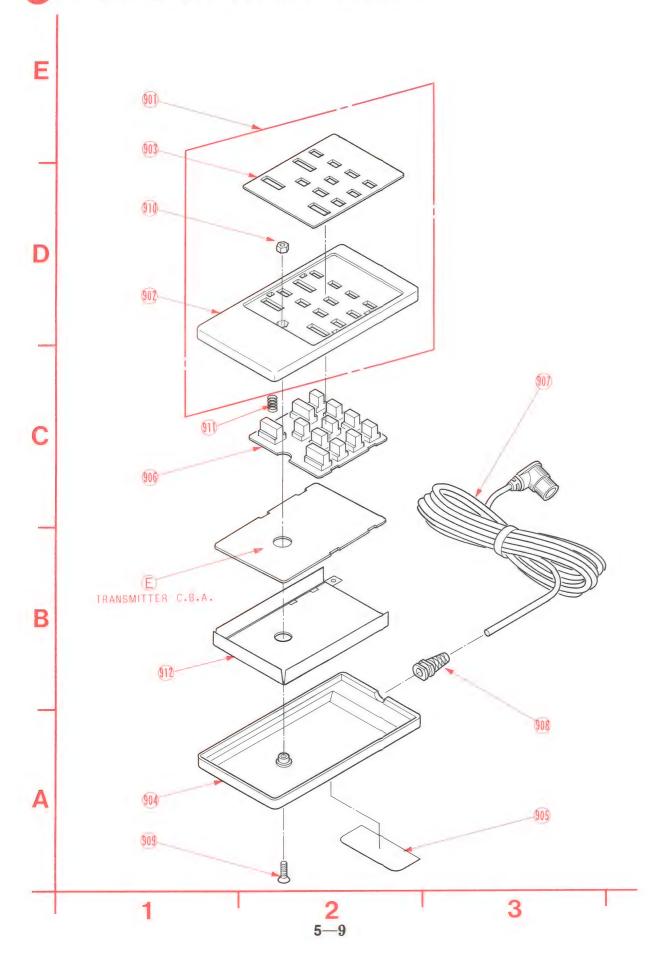
6 Chassis Frame Section-(2)



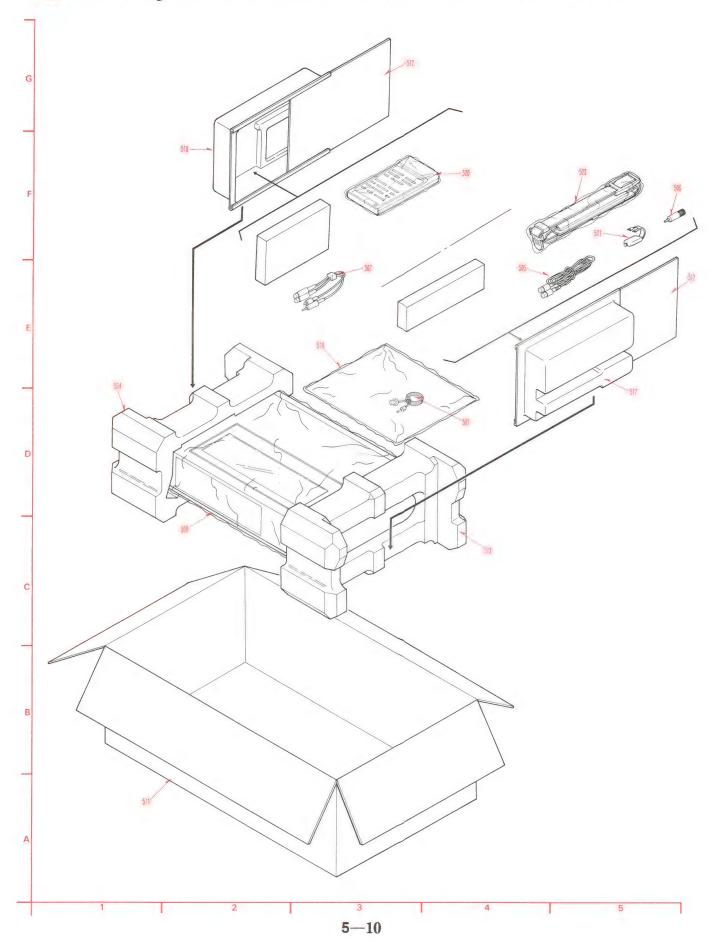
6 Casing Parts Section



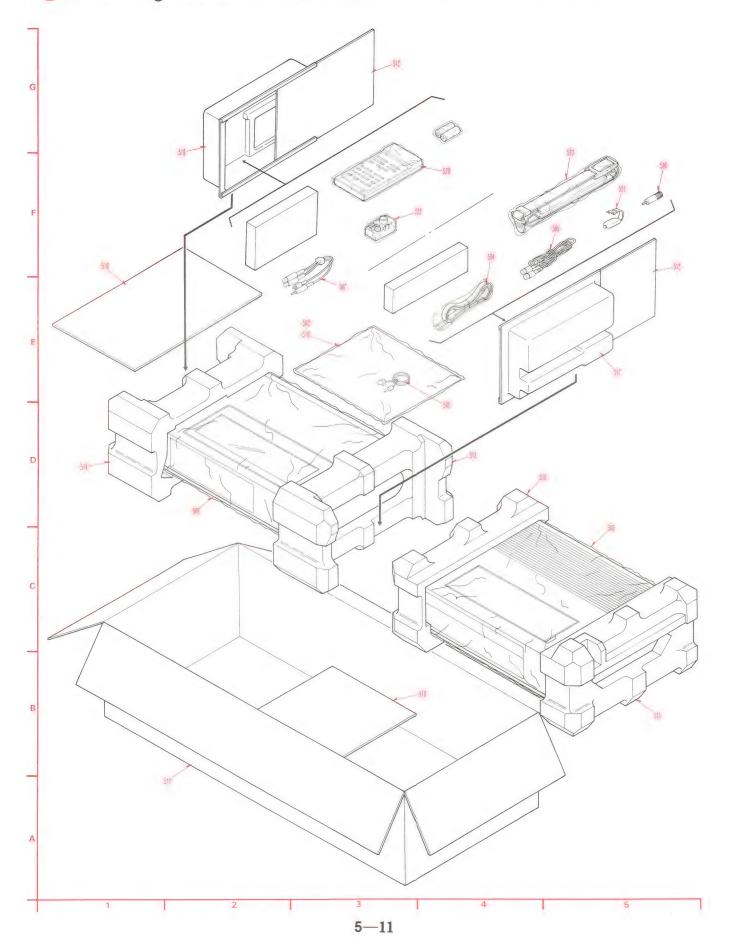
Wired Remote Control Section



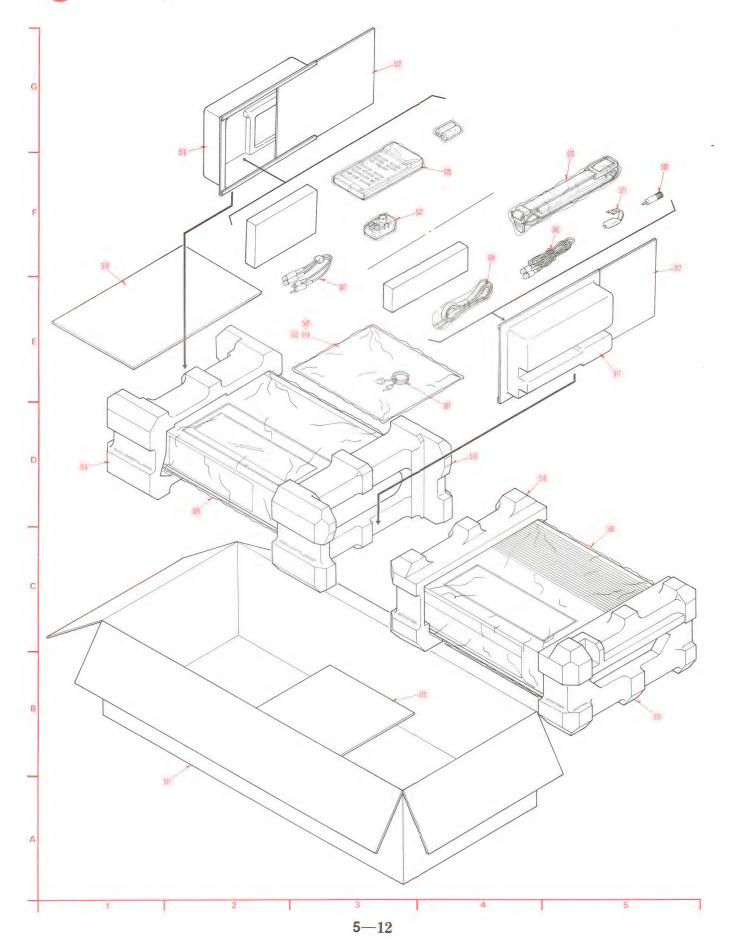
1 Packing Parts & Accessories Section (PV-5000)



Packing Parts & Accessories Section (PV-5200)



10 Packing Parts & Accessories Section (PV-5500)



MECHANICAL REPLACEMENT PARTS LIST



roaer	No. PV-5000	0/5200/5500				_	Item No.	Drawing No.	Description	Pcs/ Set	Availa- bility	Part No.	Remark
Note:	*Be sure to ma	ke your orders of replacement parts accor	ng to this list.			54	1	SHAFT HOLDER PLATE	2		VMAS0625		
	Since all parts	are available, availability colum indicates	no marl	k.	1841	1	55	1	LOADING GUIDE (L)	1		VMAS0626	
							56	1	LOADING GUIDE (R)	1	-	VMAS0627	
tem	Drawing No.	Description	Pcs/ Set	Availe- bility	Part No.	Remark	57	1	CASSETTE OPENER COVER	1	-	VMAS0627 VMAS0631	+
No.	3	F.G HEAD	1		VBK0033	-	58	3	THRUST HOLDER	1	-	VMAS0643	
2	1	ERASE HEAD	1		VBS0021	-	59	3	CAPSTAN PLATE	1	-	VMAS0645	
3	3	SECTOR GEAR (A)	1		VDGS0011		60	4	CASSETTE HOLDER (B)	1		VMAS0653	+
4	3	SECTOR GEAR (B)	1		VDGS0011		1		100000000000000000000000000000000000000		-	111111111111111111111111111111111111111	
5	3	SUB CAM GEAR	1		VDGS0012		61	1	CASSETTE OPENER	1	 	VMAS0654	+
		SUB CAN GEAR	1		VDG30013		62	6	HANDLE SUPPORT PLATE	2		VMAS0667	
6	3	MAIN CAM GEAR	1		VDGS0016	-	63	6	TOP CASE SUPPORT ANGLE	1		VMAS0673	1
7	4	DUMPER UNIT	1			-	64	2	BELT GUIDE	1		VMAS0676	
	2	IDLER ROLLER		-	VDG0098	-	65	5	SHIELD ANGLE	1		VMA5904	+
9	4	LOCK ROLLER	2		VDPS0052	-	1					VIII.5504	-
					VDPS0057	-	66	5	ADJUST ANGLE	1		VMA5914	-
10	1	INERTIA ROLLER	1		VDP0618		67	6	BATTERY DOOR SPRING	2		VMBS0140	
1.1		CURRY POLYER (V)			**************************************		68	6	BATTERY BUTTON SPRING	1	 	VMBS0140	-
11	1	SUPPLY ROLLER (K)	1		VDP0759		69	5	STOPPER SPRING	1	-	VMBS0141 VMBS0142	+
12	2	TIMING BELT	1		VDV0141		70	5	BATTERY PUSH SPRING	1	+	VMBS0142 VMBS0143	+
13	1	D.D CYLINDER UNIT	1		VEGS0027	-	/0		MALLERY FOOR SPRING	1	-	VF1D50143	+
14	1	UPPER CYLINDER UNIT	1		VEHS0032	-	71	1	A/C HEAD SPRING	1		VMBS0146	+
15	1	A/C HEAD UNIT	l		VEHS0034	-	72	1	ERASE HEAD LEVER SPRING	1	-	VMBS0146 VMBS0148	-
1/	2	CAROMAN OF THE CO.			TIPMO COCC		73	1	SUPPLY INERTIA SPRING	1	-	VMBS0148 VMBS0149	+
16	3	CAPSTAN STATOR COIL ASS'Y	1		VEMS0025	+	74	1.	POST SPRING	-			+
17	3	CAPSTAN STATOR UNIT	1		VEMS0026		75	1		1		VMBS0150	
18	3	LOADING MOTOR	1		VEMS0028		13	1	INERTIA ROLLER ARM SPRING	1	-	VMBS0151	
19	4	CASSETTE UP PROTECTOR	1		VGFS0024		76	2	ADM CDDING	,		VMBS0152	
20	6	BATTERY DOOR	1		VGKS0422		77	4	ARM SPRING	1			
							78	1	TENSION ARM SPRING	1		VMBS0153	
21	5	CASSETTE SCREW RUBBER	2		VGKS0426		79	2	LOADING SPRING	2		VMBS0154	-
22	6	HANDLE DECORATION (R)	1		VGKS0427		80	2	SPRING	1		VMBS0155	
23	6	HANDLE DECORATION (L)	1		VGKS0430	+	00	4	PRESSURE ROLLER RETURN	1	-	VMBS0156	+
24	5	JACK PLATE DECORATION	1	-	·VGNS0406		-		SPRING	-			
25	6	SLOW TRACKING DECORATION	1		VGNS0421	·	- 01	2	T. T. LUMBE GREAT				+
26	5	CONVERTER SELECT DECORATION	1		VGNS0423	-	81	2	F.F LEVER SPRING SUB LEVER SPRING	1		VMBS0157 VMBS0159	+
27	6	FRONT BUTTON DECORATION	1		VGNS0451	+	83	2	MAIN IDLER SPRING	1		VMBS0160	+
28	5	CONVERTER CHANNEL SELECT	1		VGQS0166	+	84	2	BRAKE LEVER SPRING	2	-	VMBS0161	-
		CASE					85	2	TAKEUP SOFT ARM SPRING	1		VMBS0162	+
29	6	POWER SWITCH KNOB	1		VGTS0059		1-						
30	6	CAMERA & SPEED SELECT SW	2		VGTS0076		86	2	TAKEUP SOFT BRAKE SPRING	1		VMBS0163	
		KNOB	_				87	2	SUPPLY SOFT GUIDE SPRING	1		VMBS0164	
							88	2	SUPPLY SOFT BRAKE SPRING	1		VMBS0165	+
31	6	OPERATION BUTTON (RECORD)	1		VGUS0135		89	3	SUB ROD RETURN SPRING	1		VMBS0166	
32	6	OPERATION BUTTON (F.F)	1		VGUS0136	-	90	3	SUB ROD SPRING	1		VMBS0167	-
33	6	OPERATION BUTTON (PLAY)	1		VGUS0137		-	_		-		***************************************	+
34	6	OPERATION BUTTON (REWIND)	1		VGUS0137	-	91	3	EJECT LEVER RETURN SPRING	1		VMBS0168	-
35	6	OPERATION BUTTON (EJECT)	1		VGUS0139		92	4	RELEASE ACTION SPRING	1		VMBS0169	
			-		,5000137		93	4	CASSETTE HOLDER SPRING	1		VMBS0170	+
36	6	OPERATION BUTTON (AUDIO)	1		VGUS0140	-	94	4	LOCK ARM SPRING	-2		VMBS0170	+
37	6	OPERATION BUTTON (PAUSE)	1		VGUS0140		95	4	LOCK RELEASE SPRING	2		VMBS0171 VMBS0172	+
38	6	OPERATION BUTTON (STOP)	1		VGUS0141		1	· ·	The state of the s			11100112	-
39	6	BATTERY EJECT BUTTON	1		VGUS0142		96	4	CASSETTE HOLDING SPRING (R)	1		VMBS0173	
40	5	STOPPER RELEASE BUTTON	1		VGUS0144		97	4	CASSETTE HOLDING SPRING (L)	1	 	VMBS0173	+
-		KEDDEGE BOITOR	-		70000143	+	98	4	DISCRIMINATING LEVER SPRING	1		VMBS0174 VMBS0175	+
41	6	OPERATION BUTTON (SLOW)	1	-	VGUS0146		99	2	BRAKE ARM SPRING	2		VMBS0173	+
42	I	SCREW	3		VHDS0016	+	100	4	SUB CASSETTE HOLDING SPRING	1		VMBS0180	+
43	1	SCREW	1	-	VHD0075		1.00	•	COLORDITE HOLDING SPRING			WIDOVIDI	+
44	1	ADJUST NUT	1		VHNS0014	1	101	3	LATCHET SPRING	2		VMBS0183	
45	2	SCREW	1		VHNSO014	1	102	4	CASSETTE UP SW SPRING-	1		VMBS0183	+
		OURDA	1	\vdash	VIII/00/12		102	5	GROUNDING SPRING A (RIGHT	1		VXBS0011	+
46	5	PLASTIC RIVET	2		VHN0011		103	,	UNIT)	1		AVDOOULT	+-
47	1	HINGE	3		VHN0011 VJF0109		104	5	GROUNDING SPRING A (LEFT	1		WYRCOO 1 2	+
48	5		1			+	104		UNIT)	1		VXBS0012	+
49	6	JACK PLATE	1		VJJS0029	+	105	1		4		Inmence 2	+
50	5	CONVERTER COVER (A)			VKFS0084		105	. 1	INERTIA ROLLER UPPER	1		VMDS0063	+
00		REAR FRAME SUPPORT ANGLE	2		VMAS0595				LIMITER				+
5.1	5	GMODDED COUED			Inches Co.		100		EDONE ED IME			vn.m.a.o.=20	+
51	5	STOPPER COVER	1		VMAS0596		106	5	FRONT FRAME	1	-	VMDS0070	+
52 53	6	BATTERY DOOR HOLDER BATTERY DOOR HINGE	1		VMAS0597 VMAS0598		107	5	REAR FRAME BATTERY STOPPER	1		VMDS0071 VMDS0073	+

Item No.	Drawing No.	Description	Pcs/ Set	Availa- bility	Part No.	Remark	Item No.	Drawing No.	Description	Pcs/ Set	Availa- bility	Part No.	Remark
109	4	ADJUST HOOK	1		VMDS0086		166	1	ROLLER POST UNIT	2		VXA0743	
110	1	POST STOPPER	2		VMDS0089		167	3	GROUNDING PLATE	1		VXBS0009	
							168	2	HOUSING	1		VXDS0010	
111	1	LOADING GUIDE SUPPORT	1		VMDS0092		169	1	LOADING ARM L UNIT	1 -		VXLS0134	· + · · ·
112	4	TRANSISTOR HOLDER	2		VMDS0097	-	170	1	LOADING GEAR R UNIT	1	T	VXLS0135	-i
113	3	GUIDE BLOCK	1		VMDS0102								+
114	1	DEW DETECTOR BLOCK	1		VMDS0112		171	3	RELEASE LINK UNIT	1		VXLS0138	
115			+	 			172	3	ARM KICK LEVER UNIT	1		VXLS0139	
	-		-	-		+	173	2	IDLER LEVER UNIT	1		VXLS0141	-
116	1	ERASE HEAD LEVER	1	-	VMLS0195	-	174	2	MAIN IDLER LEVER 1 UNIT	1	1	VXLS0141	-
117	4	CASSETTE HOLDING SPRING	1	_	VMLS0210		175	2	SUB IDLER LEVER UNIT		-		
118	3	EJECT KICK LEVER	1		VMLS0213		1		SOS IDEEN EEVEN UNII	1		VXLS0143	
119	4	CASSETTE DOWN SW LEVER		-			176						
120	4	CASSETTE UP SW LEVER	1	-	VMLS0217		176	2	IDLER SUPPORT UNIT	1		VXLS0144	
		CAGGETTE OF 3W DEVER	1	-	VMLS0218		177	2	TAKEUP SOFT ARM UNIT	1		VXLS0146	<u> </u>
121	2	W. 7.1	-			1	178	2	TAKEUP SOFT GUIDE UNIT	1		VXLS0147	
121	3	MAIN BRAKE KICK LEVER	1		VMLS0219		179	2	SUPPLY SOFT ARM UNIT	1		VXLS0148	
122	2	KICK LEVER	1		VMLS0223		180	2	SUPPLY SOFT GUIDE UNIT	1	1	VXLS0149	
123	3	LATCHET (A)	1		VMLS0232								
124	3	LATCHET (B)	1		VMLS0233		181	2	TRANSMITTING ARM UNIT	1		VXLS0150	
125	2	TOGGLE ARM	1		VMLS0235		182	2	P5 ARM UNIT	1		VXLS0151	1
_							183	1	INERTIA ROLLER ARM 1 UNIT	I		VXLS0154	1
126	4	RELEASE ACTION LEVER	1		VMLS0238		184	2	PRESSURE ROLLER ARM 1 UNIT		1	VXLS0157	
127	4	DISCRIMINATING LEVER	1	1	VMLS0239		185	2	CONNECTING ARM UNIT	1	+	VXLS0157	
128	5	SAFETY LEVER	1		VMLS0253				The same of the sa	-		VVI 201 20	
129	6	BATTERY DOOR SHAFT	1	1	VMSS0162		186	2	BRAKE LEVER L UNIT	1		UVI COLICE	
130	6	HANDLE SUPPORT	2	+	VMSS0166	 	187	2				VXLS0160	
			+-	-	V11550100				BRAKE ARM L UNIT	1		VXLS0161	-
131	1	INCRETA DOLLER LOUER	+		101000101	-	188	2	BRAKE LEVER R UNIT	- 1		VXLS0162	
		INERTIA ROLLER LOWER	- I		VMSS0181		189	2	BRAKE ARM R UNIT	1		VXLS0163	
122		LIMITER	+				190	4	TENSION ARM UNIT	1		VXLS0164	
132		COLLAR	. 1	ļ	VMXS0035		<u> </u>						<u>i</u>
133	1	POST SLEEVE	1		VMXS0075		191	4	TENSION BAND UNIT	1		VXLS0165	1
134	1	POST CAP	1		VMXS0076		192	4	LOCK RELEASE ARM R UNIT	1		VXLS0167	
135	1	LOADING ARM SLEEVE	2		VMXS0077		193	4	LOCK RELEASE ARM L UNIT	1		VXLS0168	
							194	4	LOCK ARM R UNIT	1		VXLS0169	
136	2	SLEEVE	1		VMXS0080		195	4	LOCK ARM L UNIT	1		VXLS0170	1
137	2	SOFT BRAKE STOPPER	2		VMXS0084		196	5	SAFETY LEVER UNIT	ì		VXLS0191	1
138	3	SLIDE WASHER (A)	5		VMXS0086		197	3	SUB ROD 1 UNIT	1		VXMS0005	† · · · · · · · · · · · · · · · · · · ·
139	3	SLIDE WASHER (B)	2		VMXS0087		198	3	MAIN ROD 1 UNIT	1		VXMS0007	+
140	3	EJECT LEVER STOPPER	1		VMXS0088		199	3	CAPSTAN MOTOR UNIT	1		VXPS0072	1
							200	2	SUPPLY REEL IDLER GEAR UNIT	1		VXPS0073	
141	3	THRUST SCREW	1		VMXS0092								
142	3	STARTER BRACKET	1		VMXS0093		201	2	TAKEUP REEL IDLER GEAR UNIT	1		VXPS0074	
143	2	IDLER WASHER	2		VMXS0094	-	202	2	MAIN IDLER UNIT	1		VXPS0075	
144	2	CAPSTAN THRUST WASHER	I	1	VMXS0097		203	2	F.F IDLER UNIT	1		VXPS0076	L
145	2	WASHER	2		VMXS0098		204	1	LOADING GEAR L UNIT				
							205	1	LOADING GEAR R UNIT	1	-	VXPS0079	
146	3	CAPSTAN THRUST WASHER	1	-	VMX0265				LOADING GEAR & UNII	1	-	VXPS0080	
147	6	WASHER	1				204	2	SECTION OF A STATE				L
148	6	TOP COVER CAUTION LABEL	1		VMZS0067		206	3	SECTOR GEAR C UNIT	1		VXPS0081	
149	5	STICKER			VQLS0188		207	2	TRANSMITTING GEAR UNIT	1		VXPS0082	
150	1		1		VQLS0474		208	2	SUPPLY REEL TABLE UNIT	1		VXRS0009	
100	1	SHIELD CASE	1		VSCS0145		209	2	TAKEUP REEL TABLE UNIT	1		VXRSO010	
15.	-		ļ				210	2	TAKEUP SOFT BRAKE UNIT	1		VXZS0024	
151	5	SHIELD CASE (TOP)	1		VSC0737								
152	3	MODE SELECT SWITCH	1		VSS0061		211	2	SUPPLY SOFT BRAKE UNIT	1		VXZS0025	
153	1	SHAFT HOLDER L UNIT	1		VXAS0289		212	6	FRONT PANEL UNIT	1		VYPS1087	
154	1	SHAFT HOLDER R UNIT	1	LT	VXAS0290		213	6	TOP CASE UNIT	1	+	VYPS1091	
155	1	INCLINED BASE L UNIT	1	-	VXAS0291		214	6	BOTTOM CASE UNIT	1		VYPS1098	
							215	6	FRONT PANEL 1 UNIT	1	-	VYPS1112	
156	1	INCLINED BASE R UNIT	1		VXAS0292								
157	1	LOADING GUIDE L UNIT	1		VXAS0293		216	5	CASSETTE COVER UNIT			INVESTIGATION OF THE PROPERTY	<u> </u>
158	1	LOADING GUIDE R UNIT	1		VXAS0293		217	6		1		VYPS1176	
159		F.F IDLER BRACKET UNIT	1	-	VXAS0294 VXAS0295				TRACKING V.R KNOB	1		VGTS0060	
160		SENSOR LAMP UNIT	+ -				218	6	SLOW TRACKING V.R KNOB	1		VGTS0061	
-		DEMOUN LAFIT UNII	I		VXAS0300		219	6	M4 NUT	2		VHD0044	
161	4	CACCEMENT ATT ATTACK	1				220	5	BATTERY CATCHER	1	!	VJF0106	
-+		CASSETTE UP UNIT	1	-	VXAS0304		-		-/				ļ
162		CASSETTE STAND R UNIT	1		VXAS0307		221	5	SHIELD ANGLE (RIGHT)	1		VMAS0678	
163		CASSETTE STAND L UNIT	1		VXAS0308		222	5	FUSE CAUTION LABEL	1		VQLS0573	
164	4	CASSETTE DOWN SW LEVER	1		VXAS0311		223	5	FUSE CAUTION LABEL	1		VQLS0574	
		PLATE UNIT	1										
165	4	CASSETTE HOLDER UNIT	1		VXASO313								

Item No.	Drawing No.	Description	Pcs/ Set	Availa- bility	Part No.	Remark	Item No.	Drawing No.	Description	Pcs/ Set	Availa- bility	Part No.	Remark
401	1	M3 NUT	3		XNG3B		901	7	TOP CASE UNIT	1		MU16VCS9P	
402	6	BIND SCREW, 3x6	2		XSB3+6KS		902	7	TOP CASE	1		MU16CS10P	
403	1	SCREW, 2x3	1		XSN2+3		903	7	TOP CASE DECORATION	1		MU16PP14P	
404	5	SCREW, 2.6x6	2		XSN26+6F		904	7	BOTTOM CASE	1	1	MU16CS11P	
405	6	SCREW, 2x5	2		XSS2+5FK		905	7	PART NO PLATE	1		MU16LB12P	
406	5	SCREW, 2.6x8	2		XSS26+8		906	7	RUBBER PLATE FOR CONTACT	1		MU16CT13A	ļ
407	2	TAPPING SCREW, 2.6x6	1	-	XTN26+6F		1		Manual 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	+			ļ
408	3	TAPPING SCREW, 2.6x8	2	-	XTN26+8F		907	7	REMOTE CONTROL CABLE	1		MU16VPG4	<u> </u>
							908	7	BUSHING	1		MU16BS16	<u> </u>
409	5	TAPPING SCREW, 3x12	1		XTN3+12F		909	7	SCREW, 2.6x10	1		XSS26+10FC	
410	1	TAPPING SCREW, 3x8	1		XTN3+8J		910	7	M2.6 NUT	1		URC180NT20	
411	6	TAPPING SCREW, 2x6	2		XTS2+6B		911	7	GROUNDING SPRING	1		MU16BN31	
412	3	TAPPING SCREW, 2.6x12	2		XTV26+12F		912	7	SHIELD SHEET	1		MU16SF32	
413	3	TAPPING SCREW, 2.6x4	2		XTV26+4F		1					10200132	+
414	1,2,3	TAPPING SCREW, 2.6x6	11		XTV26+6F		1⊢—		The second secon		<u> </u>		+
415	5	TAPPING SCREW, 2.6x8	2		XTV26+8J					-			
416	1,2,3,5	TAPPING SCREW, 2.6X8	17		XTV26+8F		-			-			
417	6	TAPPING SCREW, 3x12	5		XTV3+12AK					1	-		
418	5	TAPPING SCREW, 3x12	1		XTV3+12F		<u> </u>		ļ				
419	5	TAPPING SCREW, 3x6 TAPPING SCREW, 3x8	2		XTV3+6B XTV3+8		-						
420	3	TAPPING SCREW, 3X8	2		X1V3+8		╢—						
421	5	TAPPING SCREW, 3x8	2		XTV3+8F								
422	2	RETAINING RING E-TYPE, 1.5	1		XUC15FP					1			
423	2,4	RETAINING RING E-TYPE, 2.5	3		XUC25FP		1			+			
424	2,3	RETAINING RING E-TYPE, 2	7		XUC2FP		1						
425	4	RETAINING RING E-TYPE, 3	10		XUC3FP		l						
]						
426	1	RETAINING RING C-TYPE, 2	2	-	XUEV2FP								
427	2	RETAINING RING C-TYPE, 3	2		XUEV3FP		ł						
428	1,2,3,4	RETAINING RING C-TYPE, 3	30	-	XUEV3VW		-						
429	1	POLY SLIDER WASHER, 2	2	-	XWGV2D4G				i				
430	2	POLY SLIDER WASHER, 2.5	1		XWGV25D5G		501	8	EARPHONE	1		VBESO002	
431	2	POLY SLIDER WASHER, 2.5	2	-	XWGV25Y4G		502			+-			
432	1,2,3,4	POLY SLIDER WASHER, 3	22		XWGV3D54G		503			1	1		
433	3	POLY SLIDER WASHER, 3	3		XWGV3D7G		504			+	 		+
434	1,3	POLY SLIDER WASHER, 3	4	+	XWGV3D9G		505	8	F-F CABLE	1	-	VJA0147	
435	4	POLY SLIDER WASHER, 4	2		XWGV45Y9G		11-303	0	r-r CABLE	+	-	V3A0147	+
			-				506	8	MIC ADAPTOR	1	<u> </u>	VJPS0003	
436	1	WASHER, 4	1		XWG4FX		507	8	MIC ATTENUATOR	1	_	VJP1164	
437	5	HEX. SCREW	1		XXEVO001		1	0	HIC ATTENDATOR	1	1	VJF1164	
438	1	HEX. SCREW	2	-	XXE2C25FP		508	8	POLYETHYLENE BAG (DECK)	1	-	VPFS0022	-
439	1	SCREW WITH WASHER, 2.6x10	4	1	XYE26+BF10		510		TOLIETHTELME BAG (DECK)	+	 	VFF30022	-
440	2	SCREW WITH WASHER, 2.6x5	1		XYE26+BF5		1			+			1
							511	8	PACKING CASE	1		VPGS0484	
441	3,5	SCREW WITH WASHER, 2.6x8	. 6		XYE26+BF8		512	8	ACCESSORY CASE PAD	2		VPGS0485	ļ
442	3	SCREW WITH WASHER, 3x6	1		XYNV3+K6		513	8	RIGHT CUSHION (DECK)	1		VPNS0074	
443	1	SCREW WITH WASHER, 2.6x5	2		XYN26+A5		514	8	LEFT CUSHION (DECK)	1		VPNS0075	
444	4	SCREW WITH WASHER, 2.6x10	2		XYN26+C10FNS		515						
445	4	SCREW WITH WASHER, 2.6x14	I		XYN26+C14								
446	1	SCREW WITH WASHER, 2.6x5	2		XYN26+C5		516		ACCEPCODY CACE (:)	+-	-	HBM20000	
447	4	SCREW WITH WASHER, 2.6x6	5	 	XYN26+C6		517	8	ACCESSORY CASE (A)	1	+	VPNS0080	+
448	4		2	-	XYN26+F8		518	8	ACCESSORY CASE (B)	1	-	VPNS0081	-
449	1	SCREW WITH WASHER, 2.6x8	2	 	XYN3+B8BNS		519	8	FAN BAG	1	-	VQFS0280	+
450	4	SCREW WITH WASHER, 3x8 SCREW WITH WASHER, 3x8	2	-	XYN3+B8BN5 XYN3+F8S		520	8	WIRED REMOTE CONTROL BOX	1		VSQS0113	-
		- Indiana in the state of the s					521	8	VHF MATCHING BOX	1		VSQ0055	
							522						
							523	. 8	SHOULDER BAND	1	-	VYCS0133	
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				1			11						
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No.	Drawing No.	Description	Pcs/ Set	Availa- bility	Part No.	Remark
501	9	EARPHONE	1		VBESO002	
502	9	UHF CHANNEL FILM	1		VGKS0452	
503						
505	9	TWIN LEAD CONNECTOR F-F CABLE	1		VJA0102 VJA0147	
		T SINDLE	+		VJA0147	
506	9	MIC ADAPTOR	1		VJPS0003	
507	9	MIC ATTENUATOR	1		VJP1164	
508	9	POLYETHYLENE BAG (TUNER)	1		VPFS0012	
509	9	POLYETHYLENE BAG (DECK)	1		VPFS0022	
310	9	PAD	1		VPGS0480	
511	9	PACKING CASE	1		VPGS0482	
512	9	ACCESSORY CASE PAD	2		VPGS0485	
513	9	RIGHT CUSHION (DECK)	1		VPNS0074	
514	9	LEFT CUSHION (DECK)	1		VPNS0075	
515	9	RIGHT CUSHION (TUNER)	1		VPNS0076	
516						
517	9	LEFT CUSHION (TUNER)	1		VPNS0077	
518	9	ACCESSORY CASE (A) ACCESSORY CASE (B)	1		VPNS0080 VPNS0081	
519	9	FAN BAG	1		VQFS0279	
520	9	WIRED REMOTE CONTROL BOX	1		VSQS0113	
			1			
521	9	VHF MATCHING BOX	1		VSQ0055	
522	9	VHF ANTENNA ADAPTOR	1		VSQ0057	
523	9	SHOULDER BAND	1		VYCS0133	
			-			
			+			
			+			
E01	10					
501	10	UHF CHANNEL FILM	1		VBES0002	
503	10	CATY CHANNEL FILM	1		VGKS0452 VGKS0454	
504	10	TWIN LEAD CONNECTOR	1	-	VJA0102	
505	10	F-F CABLE	1		VJA0147	
506	10	MIC ADAPTOR	1		VJPS0003	
507	10	MIC ATTENUATOR	1		VJP1164	
508	10	POLYETHLENE BAG (TUNER)	1	\Box	VPFS0012	
509	10	POLYETHLENE BAG (DECK)	1		VPFS0022	
210	10	PAD	1		VPGS0480	
511	10	PACKING CASE	1		VPGS0481	
512	10	ACCESSORY CASE PAD	2		VPGS0481 VPGS0485	
513	10	RIGHT CUSHION (DECK)	1	-	VPNS0074	
514	10	LEFT CUSHION (DECK)	1		VPNS0075	
515	10	RIGHT CUSHION (TUNER)	1		VPNS0076	
516	10	LEFT CUSHION (TUNER)	1		VPNS0077	
517	10	ACCESSORY CASE (A)	1		VPNS0080	
519	10	ACCESSORY CASE (B) FAN BAG	1		VPNS0081	
520	10	IR WIRELESS TRANSMITTER	1	+	VQFS0278	
		UNIT	1	+	VSQS0114	
			1			
521	10	VHF MATCHING BOX	1		VSQ0055	
522	10	VHF ANTENNA ADAPTOR	1		VSQ0057	
523	10	SHOULDER BAND	1		VYCS0133	
- 1			1	ſ		

Item No.	Drawing No.	Description	Pcs/ Set	Availa- bility	Part No.	Remark
		SERVICING FIXTURES & TOOLS				
_		SERVICING PIXIORES & 100LS				
		ADAPTOR FOR VFK0133			VFK0134	
		CASSETTE HOLDER FIXTURE			VFKS0017	
	_	DIAL TORQUE GAUGE			VFK0133	
		FAN-TYPE TENSION GAUGE			VFK66	
		FINE ADJ. SCREWDRIVER			VFK0136	for 3mm¢
	¥744.4	H-POSITION ADJ. SCREWDRIVER			VFKS0003	
		HEAD CLEANING STICK			VFK27	
		HEX, WRENCH			VFK0146	for 0.9m
		HEX. WRENCH		-	VFK76	for 1.5m
		LEAF SWITCH ADJ. FIXTURE			VFKS0018	101 1,544
		MORLYTONE GREASE			MOR265	
		PLASTIC FLAMPER FOR VFK0133			VFK0180	
		POST ADJ. PLATE			VFKS0010	
		POST ADJ. SCREWDRIVER			VFK0137	
-		REEL TABLE HEIGHT GAUGE			VFKS0009	
		RETAINING RING REMOVER			VFK0144	for 3mm¢
		TENSION POST ADJ. PLATE			VFKS0015	
		V-STOPPER ADJ. FIXTURE			VFKS0016	
		VHS ALIGNMENT TAPE			VFM8080H6	
					1714	
\dashv						
-						

Model No. PV-5000/5200/5500

Note:				Q1011	2SB819(Q,R)		1
1. Be sure to m	ake your orders of repla T SAFETY NOTICE	cement parts according to this list.		Q1012	2SB643(Q,R,S)		1
Components	identified by shade have	special characteristics important for s	afety. When replacing any of these com-		2SD636(Q,R)		3
3. Unless other	only the original ones. wise specified;			Q2005	2SD636(Q,R)		1
All resistors	are in OHMS (Ω), 1/8w.	\pm 5% carbon, K=1,000Ω, M=1,000 Ks DS (μ F), \pm 10% P= $\mu\mu$ F.	Ω.	Q2006	2SB641(Q,R,S)		1
All coils are i	in MICROHENRIES (#	$_{\rm e}^{\rm H}$), m=10 $^{3}\mu$.		Q2007	2SD636(Q,R)		1
4. C.B.A: Circuit 5. C.B: Circuit	it Board Assembly. Board.			Q2011,2012	2SD636(Q,R)		2
T			Pes	Q2013	2SB641(Q,R,S)		1
Ref. No.	Part No.	Part Name & Description	/ Remarks	Q2014	2SD636(Q,R)		1
	VEPSO317A	MAIN C.B.A.	1	Q2015	2SB641(Q,R,S)		1
	1110031711			Q2016-2021	2SD636(Q,R)	A 1444 4 14 14 14 14 14 14 14 14 14 14 14	6
	VEPS0648A	SYSTEM CONTROL & MEMORY	1	Q2022,2023	2SB641(Q,R,S)		2
	151500408	COUNTER C.B.A.		Q3001	2SB641(Q,R,S)		1
	-	GOUNTER GIENT		Q3002,3003	2SC2206(B,C)	1	2
	VEPS0226A	CAPSTAN MOTOR DRIVE C.B.A.	1	Q3004	2SD636(Q,R)		1
	VEI DOZZOK	CALDIAN HOTOK DRIVE C.B.A.		03006,3007	2SC2206(B,C)		2
	VEPS0227A	CYLINDER MOTOR DRIVE	1	Q3008	2SD636(Q,R)	<u> </u>	1
	VEF30227A	C.B.A.	1	Q3009	2SB649(Q,R,S)		1
		C.B.A.		Q4001-4004	2SD636(Q,R)		4
	VEPS0408A	FULL ERASE HEAD C.B.A.	1	Q6401	2SA886V(Q,R)		1
	VEFSU4UOA	FULL ERASE HEAD C.B.A.	1	Q6401	2SB793(Q,R,S)		1
		GUD CHOREN COMPON C. P. A	,			i	2
	VEPSO649A	SUB SYSTEM CONTROL C.B.A.	1	Q6403,6404 Q6405,6406	2SD892(Q,R) 2SD636(Q,R)	:	2
	VERGOC 174	CHIDDLY BEEL POWERONO	1			· · · · · · · · · · · · · · · · · · ·	1
	VEPS00174	SUPPLY REEL DETECTOR	1	Q6407	2SB774(Q,R,S)		2
		C.B.A.		Q6501,6502	2SD636(Q,R)	1	2
	transcot = *	MANAGED DEAN SAMESAGE	1	Q6503,6504	2SB641(Q,R,S)		1
	VEPS00173	TAKEUP REEL DETECTOR	1	Q6505	2SD647 (Q,R,S)		
		C.B.A.		Q6506	2SB641(Q,R,S)		1
				Q6507	2SD636(Q,R)		2
	VUPS0006	TAKEUP PHOTO TR C.B.A.	1	Q6508,6509	2SD637(Q,R,S)		2
			1 -				
	VUPSO007	SUPPLY PHOTO TR C.B.A.	1				
	- The state of the						
	VEKS0881	SAFETY TAB SWITCH C.B.A.	1	-			
						Diodes) 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	MU16VPB3	TRANSMITTER C.B.A.	1	D1001-1004	EDAGI OOAHID		4
					ERA81-004U13	Zener	
				D1005,1006	MA165		2
		MAIN C.B.A.		D2001-2005	MA165		5
				D2010-2014	MA165		5
				D3001-3006	MA165		6
		Integrated Circuits		D3007	1SS86 or		1
C1001	BA6122		1	_	1SS99		
C1002	VCRO044		1	D3008	RD3.3EB	Zener	1
C2001	AN6357		1	D3009	MA165		1
C2002	MN6165VBA		1	D3010,3011	1SS86 or		2
C2003	AN6356		1		15599		
C2004	MN6280		1	D6401	RD11JB	Zener	1
C2005	AN6562 or		1	D6402-6405	MA165		4
	µPC358C			D6406	ERA81-004	Zener	1
C2006	VCR0053		1	D6407-6411	MA165		5
C2007	MN1453VFB		1	D6501-6507	MA165		7
C2008	AN6914		1	D6508	ERA81-004	Zener	1
C3001	VEFSY001		1	D6509	ERC04-02E3	Zener	1
C3002	VEFSY002		1	D6510,6511	ERZ-CO3DK820	Zener	2
C3003	VCR0042		1	D6513	MA165		1
C3004	AN6326		1	D7512	ERZ-CO3DK220	Zener	1
C3005	VCR0043		1				
C4001	VEFSA001		1				
C4002	VEFSA002		1			1	
C6401	VCR0045		1			Resistors	
C8001	VEFSC001		1	R1001	ERDS2TJ153	1/4W 15K	1
C8002	VEFSC002		1	R1002	ERDS2TJ393	1/4W 39K	1
				R1003,1004	ERDS2TJ103	1/4W 10K	2
		Transistors		R1005	ERDS2TJ333	1/4W 33K	1
1001-1003	2SB835		3	R1006	ERDS2TJ331	1/4W 330	1
1004	2SD992(K,L,M)		1	R1007	ERDS2TJ182	1/4W 1.8K	1
1005	2SB641(Q,R,S)		1	R1008	ERDS2TJ391	1/4W 390	1
	2SD636(Q,R)		4	R1009	ERDS2TJ222	1/4W 2.2K	1
1006-1009	230030(Q,K)					1/4W 330	1

Ref. No.

Part No.

Pcs / Set

Remarks

Part Name & Description

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pcs / Set	Romarka
R1011	ERDS2TJ681	1/4W 680	1		R2057,2058	ERDS2TJ223	1/4W 22K	_	
R1012	ERDS2TJ122	1/4W 1.2K	1		R2059,2060	ERDS2TJ103	1/4W 10K	-	
R1013	ERDS2TJ1R0	1/4W 1	1		R2061	EROS2TKG1802	Precision Metal Film	+-	
R1014	ERX12ANJR56	1/2W 0.56	1				1/4W 18K	1	
R1015	ERDS2TJ333	1/4W 33K	1		R2062	EROS2TKG3302	Precision Metal Film	+	
R1016	ERDS2TJ104	1/4W 100K	1			20021003302			
R1017	ERDS2TJ273	1/4W 27K	1		R2063	ERDS2TJ122	1/4W 33K	-	
R1018	ERDS2TJ183						1/4W 1.2K	+	
R1019,1020	ERDS2TJ473		1		R2064	ERDS2TJ472	1/4W 4.7K	1	
		1/4W 47K	2		R2065	ERDS2TJ104	1/4W 100K	1	
R1021	ERDS2TJ472	1/4W 4.7K	1		R2066	ERDS2TJ223	1/4W 22K	1	
R1022	ERDS2TJ123	1/4W 12K	1		R2067	EVN3ACA00B24	Variable 20K	1	
R1023	ERDS2TJ333	1/4W 33K	1		R2068	ERDS2TJ223	1/4W 22K	1	
R1024	ERDS2TJ104	1/4W 100K	1		R2069,2070	ERDS2TJ332	1/4W 3.3K	2	
R1025	ERDS2TJ563	1/4W 56K	1		R2071	ERDS2TJ105	1/4W 1M	1	
R1026	ERDS2TJ102	1/4W 1K	1		R2072	ERDS2TJ104	1/4W 100K	1	
R1027	ERDS2TJ123	1/4W 12K	1		R2073	ERDS2TJ224	1/4W 220K	_	
R1028	ERDS2TJ122	1/4W 1.2K	1	-	R2074	ERDS2TJ103	1/4W 10K	1	
R1029,1030	EVN3ACA00B54	Variable 50K	2		R2075		1	1	
R1031	ERDS2TJ103	1/4W 10K			1	ERDS2TJ332	1/4W 3.3K	1	
R2001-2004	ERDS2TJ103	1	1		R2076	ERDS2TJ562	1/4W 5.6K	1	
		1/4W 100K	4		R2077,2078	ERDS2TJ104	1/4W 100K	2	
R2005	ERDS2TJ563	1/4W 56K	1		R2079	EVN3ACA00B25	Variable 200K	1	
R2006	ERDS2TJ224	1/4W 220K	1		R2080	ERDS2TJ103	1/4W 10K	1	
R2007	ERDS2TJ103	1/4W 10K	1		R2081	ERDS2TJ563	1/4W 56K	1	
R2008	ERDS2TJ563	1/4W 56K	1		R2082	ERDS2TJ334	1/4W 330K	1	
R2009	ERD25TJ223	1/4W 22K	1		R2083,2084	ERDS2TJ563	1/4W 56K	2	
R2010	ERDS2TJ122	1/4W 1.2K	1		R2085	ERDS2TJ562	1/4W 5.6K	1	
R2012	ERDS2TJ273	1/4W 27K	1		R2086	ERDS2TJ104	1/4W 100K	-	
R2013,2014	ERDS2TJ104	1/4W 100K	2		R2087			1	
R2015	ERDS2TJ272	1/4W 2.7K	1			ERDS2TJ562	1/4W 5.6K	2	
R2016			_		R2097	ERD25TJ103	1/4W 10K	1	
R2017	ERDS2TJ333	1/4W 33K	1		R2098	ERDS2TJ683	1/4W 68K	1	
	ERDS2TJ103	1/4W 10K	1		R2099	ERDS2TJ331	1/4W 330	1	
R2018	ERDS2TJ332	1/4W 3.3K	1		R2100	ERDS2TJ274	1/4W 270K	1	
R2019	ERDS2TJ102	1/4W 1K	1		R2101	ERDS2TJ224	1/4W 220K	1	
R2020,2021	ERDS2TJ103	1/4W 10K	2		R2102	ERPF3A4M402S	Ceramistor		
R2022	ERDS2TJ473	1/4W 47K	1		R3001,3002	ERDS2TJ103	1/4W 10K	2	
R2023	ERDS2TJ122	1/4W 1.2K	1		R3003	ERDS2TJ102	1/4W 1K	1	
R2024	ERDS2TJ154	1/4W 150K	1		R3004	ERDS2TJ472	1/4W 4.7K	1	
R2025	ERDS2TJ224	1/4W 220K	1		R3005	ERDS2TJ562	1/4W 5.6K	1	
R2026	ERDS2TJ154	1/4W 150K	1		R3006	ERDS2TJ272	1/4W 2.7K	1	
R2027	ERDS2TJ104	1/4W 100K	1		R3007,3008	ERDS2TJ333	1/4W 33K	2	
R2028,2029	ERDS2TJ154	1/4W 150K	2		R3009	ERDS2TJ102		-	
R2030	ERDS2TJ124	1/4W 120K	1		R3011	ERDS2TJ222		1	
R2031	ERDS2TJ333						1/4W 2.2K	1	
R2032			1		R3013	ERDS2TJ102	1/4W 1K	1	
	ERDS2TJ152	1/4W 1.5K	1		R3014	ERDS2TJ272	1/4W 2.7K	1	
R2033	EROS2TKG8202	Precision Metal Film			R3015	ERDS2TJ331	1/4W 330	1	
		1/4W 82K	1		R3016	ERDS2TJ102	1/4W 1K	1	
R2034	EROS2TKG5602	Precision Metal Film			R3018	ERDS2TJ102	1/4W 1K	1	
		1/4W 56K	1		R3019	ERDS2TJ392	1/4W 3.9K	1	
R2035	ERDS2TJ103	1/4W 10K	1		R3020	ERDS2TJ562	1/4W 5.6K	1	
R2036	ERDS2TJ104	1/4W 100K	1		R3021	ERDS2TJ681	1/4W 680	1	
R2037	ERDS2TJ105	1/4W 1M	1		R3022	ERDS2TJ271	1/4W 270	1	
R2038	ERDS2TJ103	1/4W 10K	1		R3023	ERDS2TJ471	1/4W 270		
R2039	ERDS2TJ563	1/4W 56K	1		R3023	ERDS2TJ124		1	
R2040	ERDS2TJ183		-				1/4W 120K	1	
R2041			1		R3025	ERDS2TJ104	1/4W 100K	1	
R2041	ERDS2TJ223	1/4W 22K	1		R3026	ERDS2TJ393	1/4W 39K	1	
	ERDS2TJ154	1/4W 150K	1		R3027	ERDS2TJ392	1/4W 3.9K	1	
R2043	ERDS2TJ274	1/4W 270K	1		R3028	ERDS2TJ102	1/4W 1K	1	
R2044	ERDS2TJ683	1/4W 68K	1		R3029	ERDS2TJ222	1/4W 2.2K	1	
R2045	ERDS2TJ822	1/4W 8.2K	1		R3030	ERDS2TJ100	1/4W 10	1	
R2046	EVN3ACA00B15	Variable 100K	1		R3031	ERDS2TJ681	1/4W 680	1	
R2047	ERDS2TJ223	1/4W 22K	1		R3034	EVN3ACA00B53	Variable 5K	1	
R2048	ERDS2TJ682	1/4W 6.8K	1		R3035	ERDS2TJ681	1/4W 680	1	
R2049	ERDS2TJ123	1/4W 12K	1		R3036	ERDS2TJ104			
R2050	ERDS2TJ274	1/4W 270K	1		R3037			1	
2051			_			ERD25TJ682	1/4W 6.8K	1	
12052	ERDS2TJ472	1/4W 4.7K	1		R3038	ERDS2TJ222	1/4W 2.2K	1	
	ERDS2TJ222	1/4W 2.2K	1		R3039	ERDS2TJ100	1/4W 10	1	
2053	ERDS2TJ181	1/4W 180	1		R3040,3041	EVN3ACA00B13	Variable 1K	2	
12054	ERDS2TJ473	1/4W 47K	1		R3043,3044	ERDS2TJ152	1/4W 1.5K	2	
2055	ERDS2TJ104	1/4W 100K	1		R3045	ERDS2TJ102	1/4W 1K	1	
	ERDS2TJ153	1/4W 15K	1		R3046	ERDS2TJ151			

Ref. No. R3047,3048 R3049 R3051 R3052,3053 R3054 R3055 R3056 R3057 R3058 R3059 R3060 R3061 R3062 R3063 R3064 R3065 R3066 R3070 R3071 R4001 R4003 R4004 R4005 R4006 R4007	Part No. ERDS2TJ102 ERDS2TJ161 ERDS2TJ182 ERDS2TJ391 EVN3ACA00B13 ERDS2TJ820 ERDS2TJ820 ERDS2TJ100 ERDS2TJ100 ERDS2TJ103 ERDS2TJ104 ERDS2TJ563 ERDS2TJ104 ERDS2TJ104 ERDS2TJ104 ERDS2TJ105 ERDS2TJ106 ERDS2TJ107 ERDS2TJ108 ERDS2TJ109 Part Name & Description 1 / 4 w	Pos // Set	Remarks	Ref. No. R6518 R6519 R6520,6521 R6522 R6523 R6524 R6525 R6526,6527 R6528 R6529 R6530 R6531	Part No. ERDS2TJ682 ERDS2TJ563 ERDS2TJ332 ERDS2TJ822 EVJ5LA007B15 EVN3ACA00B15 ERDS2TJ103 ERX12ANJR22 ERDS2TJ222 ERDS2TJ563	Part Name & 2 Variable Track Variable Metal Oxide	1/4w 6.8k 1/4w 56K 1/4w 3.3k 1/4w 8.2k 1/4w 8.2k 100k 100k 1/4w 10k 1/2w 0.22 1/4w 2.2k 1/4w 56K	Pcs / Set 1 1 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1	Remarks	
R3049 R3051 R3052,3053 R3054 R3055 R3056 R3056 R3057 R3058 R3059 R3060 R3061 R3062 R3063 R3064 R3065 R3066 R3070 R3071 R4001 R4003 R4004 R4005 R4006 R4007	ERDSZTJ161 ERDSZTJ182 ERDSZTJ182 ERDSZTJ391 EVN3ACAOOB13 ERDSZTJ820 ERDSZTJ820 ERDSZTJ100 ERDSZTJ102 ERDSZTJ102 ERDSZTJ104 ERDSZTJ105 ERDSZTJ104 ERDSZTJ105 ERDSZTJ104 ERDSZTJ105 ERDSZTJ106 ERDSZTJ106 ERDSZTJ107 ERDSZTJ107 ERDSZTJ108 ERDSZTJ108 ERDSZTJ108 ERDSZTJ109 ERDSZTJ102 ERDSZTJ102 ERDSZTJ102	1/4W 560 1/4W 1.8K 1/4W 390 Variable 1K 1/4W 82 1/4W 10 1/4W 10 1/4W 10 1/4W 560 1/4W 56K 1/4W 100K 1/4W 1.5K	1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		R6519 R6520,6521 R6522 R6523 R6524 R6525 R6525 R6526,6527 R6528 R6529 R6530	ERDS2TJ563 ERDS2TJ332 ERDS2TJ822 EVJ5LA007B15 EVN3ACA00B15 ERDS2TJ103 ERX12ANJR22 ERDS2TJ222	Variable	1/4W 56K 1/4W 3.3K 1/4W 8.2K 100K 100K 1/4W 10K 1/2W 0.22 1/4W 2.2K 1/4W 56K	1 2 1 1 1 1 2 1 1 1 2 1 1	
R3051 R3052,3053 R3054 R3055 R3056 R3057 R3057 R3058 R3059 R3060 R3061 R3062 R3063 R3064 R3065 R3066 R3070 R3071 R4001 R4003 R4004 R4005 R4006 R4007	ERDSZTJ182 ERDSZTJ391 EVN3ACAOOB13 ERDSZTJ820 ERDSZTJ821 ERDSZTJ100 ERDSZTJ102 ERDSZTJ102 ERDSZTJ104 ERDSZTJ105 ERDSZTJ104 ERDSZTJ105 ERDSZTJ104 ERDSZTJ105 ERDSZTJ105 ERDSZTJ106 ERDSZTJ106 ERDSZTJ106 ERDSZTJ107 ERDSZTJ107 ERDSZTJ108 ERDSZTJ108 ERDSZTJ108 ERDSZTJ109 ERDSZTJ109 ERDSZTJ102 ERDSZTJ102	1/4w 1.8K 1/4w 390 Variable 1K 1/4w 82 1/4w 82 1/4w 10 1/4w 10 1/4w 560 1/4w 56K 1/4w 100K 1/4w 1.5K 1/4w 100K 1/4w 1.5K 1/4w 1.5K 1/4w 1.5K	1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		R6520,6521 R6522 R6523 R6524 R6525 R6526,6527 R6528 R6529 R6530	ERDS2TJ332 ERDS2TJ822 EVJ5LA007B15 EVN3ACA00B15 ERDS2TJ103 ERX12ANJR22 ERDS2TJ222	Variable	1/4W 3.3K 1/4W 8.2K ing 100K 100K 1/4W 10K 1/2W 0.22 1/4W 2.2K 1/4W 56K	2 1 1 1 1 2	
R3052,3053 R3054 R3055 R3056 R3057 R3058 R3059 R3060 R3061 R3062 R3063 R3064 R3065 R3066 R3070 R3071 R4001 R4001 R4001 R4005 R4006 R4007	ERDSZTJ391 EVN3ACA00B13 ERDSZTJ820 ERDSZTJ821 ERDSZTJ100 ERDSZTJ103 ERDSZTJ102 ERDSZTJ104 ERDSZTJ104 ERDSZTJ104 ERDSZTJ104 ERDSZTJ104 ERDSZTJ105 ERDSZTJ105 ERDSZTJ106 ERDSZTJ107 ERDSZTJ107 ERDSZTJ107 ERDSZTJ107 ERDSZTJ107	1/4W 390 Variable 1K 1/4W 82 1/4W 820 1/4W 10 1/4W 10 1/4W 560 1/4W 566 1/4W 100K 1/4W 1.5K 1/4W 100K	2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		R6522 R6523 R6524 R6525 R6526,6527 R6528 R6529 R6530	ERDS2TJ822 EVJ5LA007B15 EVN3ACA00B15 ERDS2TJ103 ERX12ANJR22 ERDS2TJ222	Variable	1/4W 8.2K ing 100K 100K 1/4W 10K 1/2W 0.22 1/4W 2.2K 1/4W 56K	1 1 1 1 2	
R3054 R3055 R3056 R3057 R3058 R3059 R3060 R3061 R3062 R3063 R3064 R3065 R3066 R3070 R3071 R4001 R4003 R4004 R4005 R4006 R4007	EVN3ACA00B13 ERDS2TJ820 ERDS2TJ821 ERDS2TJ100 ERDS2TJ103 ERDS2TJ102 ERDS2TJ561 ERDS2TJ563 ERDS2TJ104 ERDS2TJ152 ERDS2TJ152 ERDS2TJ103 ERDS2TJ103 ERDS2TJ102 ERDS2TJ102 ERDS2TJ102 ERDS2TJ102	Variable 1K 1/4W 82 1/4W 820 1/4W 10 1/4W 10 1/4W 560 1/4W 56K 1/4W 100K 1/4W 10K 1/4W 10K 1/4W 10K 1/4W 10K 1/4W 150K 1/4W 10K 1/4W 10K 1/4W 10K 1/4W 10K 1/4W 10K	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		R6523 R6524 R6525 R6526,6527 R6528 R6529 R6530	EVJ5LA007B15 EVN3ACA00B15 ERDS2TJ103 ERX12ANJR22 ERDS2TJ222	Variable	100K 100K 1/4W 10K 1/2W 0.22 1/4W 2.2K 1/4W 56K	1 1 1 2	
R3055 R3056 R3057 R3058 R3059 R3060 R3061 R3061 R3062 R3063 R3064 R3065 R3066 R3070 R3071 R4001 R4003 R4004 R4005 R4006 R4007	ERDS2TJ820 ERDS2TJ821 ERDS2TJ100 ERDS2TJ103 ERDS2TJ102 ERDS2TJ561 ERDS2TJ563 ERDS2TJ104 ERDS2TJ152 ERDS2TJ1684 ERDS2TJ103 ERDS2TJ102 ERDS2TJ102 ERDS2TJ102 ERDS2TJ102	1/4W 82 1/4W 820 1/4W 10 1/4W 10 1/4W 18 1/4W 560 1/4W 56K 1/4W 100K 1/4W 1.5K 1/4W 100K 1/4W 1.5K 1/4W 1.5K	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		R6524 R6525 R6526,6527 R6528 R6529 R6530	EVN3ACA00B15 ERDS2TJ103 ERX12ANJR22 ERDS2TJ222	Variable	100K 1/4W 10K 1/2W 0.22 1/4W 2.2K 1/4W 56K	1 1 2	
R3056 R3057 R3058 R3059 R3060 R3061 R3062 R3063 R3064 R3065 R3066 R3070 R3071 R4001 R4003 R4004 R4005 R4005 R4006 R4007	ERDSZTJ821 ERDSZTJ100 ERDSZTJ103 ERDSZTJ102 ERDSZTJ561 ERDSZTJ563 ERDSZTJ563 ERDSZTJ104 ERDSZTJ152 ERDSZTJ1684 ERDSZTJ103 ERDSZTJ102 ERDSZTJ102 ERDSZTJ102 ERDSZTJ102	1/4W 820 1/4W 10 1/4W 10K 1/4W 16K 1/4W 560 1/4W 56K 1/4W 100K 1/4W 1.5K 1/4W 680K 1/4W 10K	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		R6525 R6526,6527 R6528 R6529 R6530	ERDS2TJ103 ERX12ANJR22 ERDS2TJ222		1/4W 10K 1/2W 0.22 1/4W 2.2K 1/4W 56K	1 2 1	
R3057 R3058 R3059 R3060 R3061 R3062 R3062 R3064 R3065 R3066 R3070 R3071 R4001 R4003 R4004 R4005 R4005	ERDSZTJ100 ERDSZTJ103 ERDSZTJ102 ERDSZTJ561 ERDSZTJ563 ERDSZTJ104 ERDSZTJ104 ERDSZTJ105 ERDSZTJ1064 ERDSZTJ107 ERDSZTJ107 ERDSZTJ107 ERDSZTJ107 ERDSZTJ107 ERDSZTJ107	1/4W 10 1/4W 10K 1/4W 1K 1/4W 560 1/4W 56K 1/4W 100K 1/4W 1.5K 1/4W 680K 1/4W 10K 1/4W 150	1 1 1 1 1 1 1 1		R6526,6527 R6528 R6529 R6530	ERX12ANJR22 ERDS2TJ222	Metal Oxide	1/2W 0.22 1/4W 2.2K 1/4W 56K	2	
R3058 R3059 R3060 R3061 R3061 R3062 R3063 R3064 R3065 R3066 R3070 R3071 R4001 R4003 R4004 R4005 R4006 R4007	ERDSZTJ103 ERDSZTJ102 ERDSZTJ561 ERDSZTJ563 ERDSZTJ104 ERDSZTJ104 ERDSZTJ105 ERDSZTJ108 ERDSZTJ103 ERDSZTJ102 ERDSZTJ102 ERDSZTJ102 ERDSZTJ102	1/4W 10K 1/4W 1K 1/4W 560 1/4W 56K 1/4W 100K 1/4W 1.5K 1/4W 680K 1/4W 10K 1/4W 10K 1/4W 150	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		R6528 R6529 R6530	ERDS2TJ222	Metal Oxide	1/4W 2.2K 1/4W 56K	1	
R3059 R3060 R3061 R3062 R3063 R3064 R3065 R3066 R3070 R3071 R4001 R4003 R4004 R4005	ERDSZTJ102 ERDSZTJ561 ERDSZTJ563 ERDSZTJ104 ERDSZTJ152 ERDSZTJ152 ERDSZTJ1684 ERDSZTJ103 ERDSZTJ102 ERDSZTJ102 ERDSZTJ102	1/4W 1K 1/4W 560 1/4W 56K 1/4W 100K 1/4W 1.5K 1/4W 680K 1/4W 10K 1/4W 1K 1/4W 150	1 1 1 1 1 1		R6529 R6530			1/4W 56K		
R3060 R3061 R3062 R3063 R3064 R3065 R3066 R3070 R3071 R4001 R4003 R4004 R4005 R4006 R4007	ERDS2TJ561 ERDS2TJ563 ERDS2TJ104 ERDS2TJ152 ERDS2TJ152 ERDS2TJ164 ERDS2TJ103 ERDS2TJ102 ERDS2TJ102 ERDS2TJ102	1/4W 560 1/4W 56K 1/4W 100K 1/4W 1.5K 1/4W 680K 1/4W 10K 1/4W 1K 1/4W 150	1 1 1 1 1		R6530	ERDS2TJ563			. 1	
R3061 R3062 R3063 R3064 R3065 R3066 R3070 R3071 R4001 R4003 R4004 R4005 R4006 R4007	ERDS2TJ563 ERDS2TJ104 ERDS2TJ152 ERDS2TJ684 ERDS2TJ103 ERDS2TJ102 ERDS2TJ151 ERDS2TJ102 ERDS2TJ102	1/4W 56K 1/4W 100K 1/4W 1.5K 1/4W 680K 1/4W 10K 1/4W 1K 1/4W 150	1 1 1 1							
R3062 R3063 R3064 R3065 R3066 R3070 R3071 R4001 R4003 R4004 R4005 R4006 R4007	ERDS2TJ104 ERDS2TJ152 ERDS2TJ684 ERDS2TJ103 ERDS2TJ102 ERDS2TJ151 ERD25TJ102 ERDS2TJ472	1/4W 100K 1/4W 1.5K 1/4W 680K 1/4W 10K 1/4W 1K 1/4W 150	1 1 1	A1 77	R6531	ERDS2TJ223		1/4W 22K	1	
R3063 R3064 R3065 R3066 R3070 R3071 R4001 R4001 R4005 R4005	ERDS2TJ152 ERDS2TJ684 ERDS2TJ103 ERDS2TJ102 ERD25TJ151 ERD25TJ102 ERDS2TJ472	1/4w 1.5K 1/4w 680K 1/4w 10K 1/4w 1K 1/4w 150	1 1 1	M.V.		ERDS2TJ222		1/4W 2.2K	1	
R3064 R3065 R3066 R3070 R3071 R4001 R4003 R4004 R4005 R4006 R4007	ERDS2TJ684 ERDS2TJ103 ERDS2TJ102 ERD25TJ151 ERD25TJ102 ERDS2TJ472	1/4W 680K 1/4W 10K 1/4W 1K 1/4W 150	1		R6532	ERDS2TJ270	ļ	1/4W 27	1	
R3065 R3066 R3070 R3071 R4001 R4003 R4004 R4005 R4006 R4007	ERDS2TJ103 ERDS2TJ102 ERD25TJ151 ERD25TJ102 ERDS2TJ472	1/4W 10K 1/4W 1K 1/4W 150	1		R8001	ERDS2TJ222		1/4W 2.2K	1	
R3066 R3070 R3071 R4001 R4003 R4004 R4005 R4006 R4007	ERDS2TJ102 ERD25TJ151 ERD25TJ102 ERDS2TJ472	1/4W 1K 1/4W 150			R8002	ERDS2TJ272		1/4W 2.7K	. 1	
R3070 R3071 R4001 R4003 R4004 R4005 R4006 R4007	ERD25TJ151 ERD25TJ102 ERDS2TJ472	1/4W 150			R8003,8004	ERDS2TJ102		1/4W 1K	2	
R3071 R4001 R4003 R4004 R4005 R4006 R4007	ERD25TJ102 ERDS2TJ472		1		R8006	ERDS2TJ821	ļ	1/4W 820	1	
R4001 R4003 R4004 R4005 R4006 R4007	ERDS2TJ472	1/4W 1K	1		R8007	ERDS2TJ152	ļ	1/4W 1.5K	1	
R4003 R4004 R4005 R4006 R4007	-		1		R8008	ERDS2TJ391		1/4W 390	1	
R4004 R4005 R4006 R4007	ERDS2TJ220	1/4W 4.7K	1		R8009	EVN3ACA00B23	Variable	2K	1	·
R4005 R4006 R4007		1/4W 22	1		R8010	ERDS2TJ391	L	1/4W 390	1	<u> </u>
R4006 R4007	ERDS2TJ271	1/4W 270	1		R8011	ERD25TJ471	<u> </u>	1/4W 470	1	
R4007	EROS2TKG2502	Precision Metal Film			R8012	ERDS2TJ101		1/4W 100	1	
R4007		1/4W 25K	1		R8013	ERDS2TJ821		1/4W 820	1	<u> </u>
	ERDS2TJ223	1/4W 22K	1		R8014	ERDS2TJ122		1/4W 1.2K	1	
	ERDS2TJ151	1/4W 150	1		R8015	ERDS2TJ271		1/4W 270	. 1	
R4008	ERDS2TJ471	1/4W 470	1		R8016	EVN3ACA00B52	Variable	500	1	
R4009	ERD25TJ181	1/4W 180	1							
R4010	ERDS2TJ271	1/4W 270	1			-	1			
R4011	EVN3ACA00B15	Variable 100K	1	44.00						
R4012	ERDS2TJ333	1/4W 33K	1		-l	+				
R4013	ERDS2TJ472	1/4W 4.7K	1			· · · · ·			-	
R4014	ERDS2TJ103	1/4W 10K	1				<u> </u>			
R4015	ERDS2TJ330	1/4W 33	1				Capacitors			
R4016 R4018	ERDS2TJ473 ERDS2TJ182	1/4W 47K 1/4W 1.8K	1		C1001 C1002	ECKZ1H390K ECKZ1H221KB	Ceramic	50V 39P 50V 220P	1	
R6401	ERDS2TJ102	1/4W 1K	1		C1002	ECKZ1H103ZV	Ceramic	50V 0.01	- 1	
R6402	ERX12ANJR51	Metal Oxide 1/2W 0.51	1		C1004	ECKF1H103ZV	Ceramic	50V 0.01		
R6403	ERDS2TJ220	1/4W 22	1		C1005	ECKZ1H331KB	Ceramic	50V 330P	1	
R6404	ERDS2TJ823	1/4W 82K	1		C1006,1007	ECEA1CSS221	Electrolytic	16V 220		
R6405	ERDS2TJ102	1/4W 1K	1		C1008	ECEA1CSS101	Electrolytic	167 100		
R6406	ERDS2TJ221	1/4W 220	1		C1009,1010	ECEA1ASS221	Electrolytic	10V 220	2	
R6407	ERDS2TJ473	1/4W 47K	1	- match on the f	C1011,1012	ECEAOJSS221	Electrolytic	6.3V 220	2	
R6408,6409	ERDS2TJ103	1/4W 10K	2		C1013	ECEAOJK330	Electrolytic	6.3V 33	1	
R6410	ERDS2TJ562	1/4W 5.6K	1		C1014	EECEAOJK101	Electrolytic	6.3V 100	1	
R6411	ERDS2TJ563	1/4W 56K	1		C1015	ECEA1HK010	Electrolytic	50V 1		
R6412	ERDS2TJ333	1/4W 33K	1		C1016	ECKZ1H103ZV	Ceramic	50V 0.01	1	
R6413,6414	ERDS2TJ563	1/4W 56K	2		C2001	ECKZ1H102KB	Ceramic	50V 0.001	1	
R6415,6416	ERDS2TJ683	1/4W 58K	2		C2002	ECWM1H272KZ	Polyester	50V 0.0027	1	
R6417	ERDS2TJ103	1/4W 10K			C2003	ECWM1H102KZ	Polyester	50V 0.001	1	
R6418	ERDS2TJ473	1/4W 47K	1		C2004	ECEA1EKN2R2	Electrolytic	25V 2.2	1	
R6419	ERDS2TJ333	1/4W 47K	1	mata)	C2005	ECWM1H152KZ	Polyester	50V 0.0015	. 1	
R6420	ERD25TJ333	1/4W 33K			C2006	ECSF16ER1K	Tantalum	16V 0.1	1 1	
R6501	ERDS2TJ680	1/4W 68	1		C2007	ECWM1H222KZ	Polyester	50V 0.0022	1	
R6502	ERDS2TJ104	1/4W 100K	1		C2008	ECEAOJK470	Electrolytic	6.3V 47		
R6503	ERDS2TJ331	1/4W 330	1		C2009	ECEA1HKN010	Electrolytic	50V 1	 	
R6504	ERDS2TJ223	1/4W 22K	1		C2010	ECEA1EKN2R2	Electrolytic	25V 2.2		
R6505	ERDS2TJ103	1/4W 10K	1		C2011	ECEA1HK010	Electrolytic	50V 1	1	
R6506	ERDS2TJ224	1/4W 220K	1		C2012,2013	ECWM1H562KZ	Polyester	50V 0.0056	. 2	
R6507	ERDS2TJ474	1/4W 470K	1		C2014	ECSF16ER1K	Tantalum	16V 0.1		
R6508	ERDS2TJ222	1/4W 2.2K	1		C2015,2016	ECEAOJK470	Electrolytic	6.3V 47	** ** *	
R6509	ERDS2TJ103	1/4W 10K	1		C2017	ECEA1CK100	Electrolytic	16V 10	-	No. 1
R6510	ERDS2TJ683	1/4W 16K	1		C2017	ECEA1HK010	Electrolytic	50V 1	*····	
R6511	ERDS2TJ561	1/4W 560	1		C2019	ECCZ1H080CC	Ceramic	50V 8P	-	
R6512	ERDS2TJ331	1/4W 330	1		C2020	ECWM1H562KZ	Polyester	50V 0.0056		
R6513	ERDS2TJ563	1/4W 56K			C2021	ECEA1HKR1	Electrolytic	50V 0.0030		
R6514	ERDS2TJ750	1/4W 75	1		C2022	ECEAOJK470	Electrolytic	6.3V 47		
R6515	ERDS2TJ332	1/4W 3.3K	1		C2023	ECEA6Z47	Electrolytic	6V 47		
	ERDS2TJ562	1/4W 5.6K	1		C2024	ECWM1H182KZ	Polyester	50V 0.0018		
R6516	ERDS2TJ332	1/4W 3.3K	1		, , ~= ~= ~	~~	,			

Ref. No.	Part No.	Part Name & Descr	intion	Pcs /	Remarks	Ref. No.	Post N			Pe	
C2027	ECEAOJK470			Set			Part No.	Part Name	& Description	Set	t Remarks
C2027		Electrolytic 6.3		1		C3053	ECEA1AK330	Electrolytic	10V 33	1	
C2028	ECWM1H223KZ	Polyester 50V		1		C3054,3055	ECEAOJSS221	Electrolytic	6.3V 220	2	
C2030,2031	ECEA0JK470	Electrolytic 6.3		1		C3056	ECEAOJK220	Electrolytic	6.3V 22	1	
	ECWM1H123KZ	Polyester 50V		2		C3057,3058	ECEAOJK470	Electrolytic	6.3V 47	2	
C2032	ECCZ1H820K	Ceramic 50V		1		C3059	ECEA1HKN010	Electrolytic	50V 1	. 1	1
C2033	ECV1ZW20X53N	Trimmer	20P	I		C3060,3061	ECEA1HK010	Electrolytic	50V 1	2	
C2034	ECCZ1H151K	Ceramic 50V		1		C3063	ECKZ1H103ZV	Ceramic	50V 0.01	1	
C2035	ECEAOJK470	Electrolytic 6.3	V 47	1		C3064	ECKZ1H561KB	Ceramic	50V 560P	1	
C2036	ECEA1CK100	Electrolytic 16V	10	1		C3065	ECEAOJK470	Electrolytic	6.3V 47	. 1	†
C2037	ECEA1HK2R2	Electrolytic 50V	2.2	_1		C3066	ECKZ1H103ZV	Ceramic	50V 0.01	1	·
C2038	ECSF16ER1K	Tantalum 16V	0.1	1		C3067	ECCZ1H101K	Ceramic	50V 100P	1	
C2039	ECWM1H153KZ	Polyester 50V	0.015	1		C3068	VCYW1H104JS	Ceramic	50V 0.1	1	
C2040	ECWM1H332KZ	Polyester 50V	0.0033	1		C3069,3070	ECKZ!H102KB	Ceramic	50V 0.001	2	
C2041	ECEA1HK3R3	Electrolytic 50V	3.3	1		C3073,3074	VYC25473KX	Semiconductor	25V 0.047	2	
C2042	ECEAOJK470	Electrolytic 6.3	V 47	1		C3075	ECCZ1H101K	Ceramic	50V 100P	-4-	-+
C2043	ECWM1H562KZ	Polyester 50V	0.0056	1		C3076	ECEAOJK470	Electrolytic	6.3V 47	1	<u> </u>
C2044	ECWM1H223KZ	Polyester 50V	0.022	1		C3077	ECCZ1H270K	Ceramic	50V 27P		
C2045	ECEA1AK220	Electrolytic 10V	22	1 ,		C3078	VCY25473KX	Semiconductor		^	+
C2046	ECSF16ER1K	Tantalum 16V		1		C3079	ECCZ1H470K	Ceramic			
C2047	ECEA1HK010	Electrolytic 50V		1		C3080	ECKZ1H102KB			4	+
C2048	ECKZ1H472ZF		0.0047	1		C3081,3082		Ceramic	50V 0.001	1	
C2051	ECWM1H153KZ	Polyester 50V		1			ECKZ1H103	Ceramic	50V 0.01	2	
C2052	ECKF1H103ZV	Ceramic 50V	0.01			C4001	ECKZ1H561KB	Ceramic	50V 560P	1	ļ
C2053	ECEA10Z22			1		C4002	ECEA1EK3R3	Electrolytic	25V 3.3	- 1	
C2054	ECKZ1H680KB	Electrolytic 10V	22	1 :		C4003	ECEA1AK330	Electrolytic	10V 33	1	
C2055		Ceramic 50V	68P	1.		C4004	ECEA1HK2R2	Electrolytic	50V 2.2	1	
	ECKZ1H681KB	Ceramic 50V	680P	1+		C4005	ECQV05563JZ	Polyester	50V 0.056	1	4
C2057	ECKZ1H102KB	Ceramic 50V	0.001	_1		C4006	ECEA1AK330	Electrolytic	10V 33	1	
C3001	ECEA1EK4R7	Electrolytic 25V	4.7	1		C4007	ECEA1HK010	Electrolytic	50V 1	_ 1	1
C3002	VCYW1H104JS	Ceramic 50V	0.1	_1		C4008	ECEAOJK220	Electrolytic	6.3V 22	1	
C3003	ECEA1HK010	Electrolytic 50V	I	1		C4009	ECV1ZW60X64	Trimmer	60P	1	
C3004	ECEAOJK470	Electrolytic 6.3	47	1		C4010	ECQP1152JZ	Polyester	100V0.0015	1	
C3005	ECKZ1H103ZV	Ceramic 50V	0.01	1		C4011	ECWM1H153KZ	Polyester	50V 0.015	1	+
C3007,3008	ECCZ1H270K	Ceramic 50V	27P	2		C4012	ECKZ1H472ZF	Ceramic	50V 0.0047	1	
C3009	ECEAOJK470	Electrolytic 6.3	47	1		C4013,4014	ECEA1CK100	Electrolytic	16V 10	2	
C3010	ECCZ1H220K	Ceramic 50V	22P	1		C4015	ECEAOJK101	Electrolytic	6.3V 100	1	*****
C3011	ECKZ1H103ZV	Ceramic 50V	0.01	1		C4016	ECEA1EK3R3	Electrolytic	25V 3.3	1	
C3012	ECEAO.JK470	Electrolytic 6.3V	47	1 !		C4017	ECKZ1H102ZF	Ceramic	50V 0.001	1	
C3013	ECEA1HK2R2	Electrolytic 50V	2.2	1		C4018	ECEAOJK470	Electrolytic	6.3V 47	1	i
C3014	ECWM1H333KZ	Polyester 50V	0.033	1		C4019	ECSF16ER47K	Tantalum	16V 0.47	1	
C3015	ECEAICSS331	Electrolytic 16V	330	1		C4020	ECSF16ER22K	Tantalum	16V 0.22	1	
C3016	ECEAOJK220	Electrolytic 6.3V	22	1		C4021	ECQV05473JZ	Polyester	50V 0.047	1	
C3017	ECEA1AK330	Electrolytic 10V	33	1		C4022	ECEA1AK330	Electrolytic	10V 33	1	
C3018	ECCZ1H330K	Ceramic 50V	33P	1		C4023	ECEA1CK100	Electrolytic	16V 10	1	
C3019	ECKZ1H102KB	Ceramic 50V	0.001	1 :		C4024	ECEAOJK470	Electrolytic	6.3V 47	1	
C3020	ECEA14KR1	Electrolytic 50V	0.1	1		C4025	ECEA1HKR22	Electrolytic	50V 0.22	1	
C3021	ECKZ1H221KB	Geramic 50V	220P	1		C4026	ECSF16ER15K	Tantalum		1	
C3023,3024	ECEA1HK010	Electrlytic 50V	1	2		C4027	ECEA1AK330	de consumero comme			
C3025	ECCZ1H151K	Ceramic 50V	150P	1		C4028	ECSF16ERIK	Electrolytic	10V 33		
C3026	ECEA1EK4R7	Electrolytic 25V	4.7	1		C4030	ECEA1CK470	Tantalum	16V 0.1	1	
C3027	ECEA1HK010	Electrolytic 50V	1	1		C4031		Electrolytic	16V 47	1	
C3028	ECEA1HK2R2	Electrolytic 50V	2.2	1		C6401	ECWM1H153KZ	Polyester	50V 0.015	1	
C3029	ECKZ IH561KB	Ceramic 50V	560P	1		- Comment of the state	ECEA1CK220	Electrolytic	16V 22	1	
C3030	ECEAOJK470	Electrolytic 6.3V	The second second	11		C6402	ECEA1HK010	Electrolytic	50V I	1	
C3031	ECKZ1H271KB			4		C6403	ECEA1CK330	Electrolytic	16V 33	1	
C3032	ECEAOJK221	the second of the second	270P			C6404	ECEAJHK010	Electrolytic	50V 1	1	
C3033,3034		Electrolytic 6.3V				C6501	ECEA1EK4R7	Electrolytic	25V 4.7	. 1	
C3035	ECKZ1H103ZV	Ceramic 50V	0.01	2 +		C6502,6503	ECEA1HK010	Electrolytic	50V 1	2	
	FCEA1CK100	Electrolytic 16V	1.0	. 1		C6504	ECEA1CK100	Electrolytic	16V 10	1 [
C3036-3038	ECEA1HK010	Electrolytic 50V	1	3		C6505	ECKZ1H102KB	Ceramic	50V 0.001	1	
	ECEA1CK100	Electrolytic 16V	10	1		C6506,6507	ECCZ1H121K	Ceramic	50V 120P	2	
C3040	ECV1ZW60X64	Trimmer	60P	1 :		C6508	ECSF16ER27K	Tantalum	16V 0.27	1	
C3042	ECV1ZW60X64	Trimmer	60P	1		C6509	ECEA1EK220	Electrolytic	25V 22	1	
C3043	VCYW1H104JS	Ceramic 50V	0.1	1		C6510-6512	ECKF1H103ZF	Ceramic	50V 0.01	3	
C3044	ECEA1CK100	Electrolytic 16V	1.0	1		C8001	ECEA1AK330	Flectrolytic	10V 33.	1	
C3045,3046	ECEAOJK470	Electrolytic 6.3V	47	2		C8002	ECKZ1H103ZV	Ceramic	50V 0.01	1	
C3047	ECKZ1H103ZV	Ceramic 50V	0.01	1		C8003	ECKZ1H472ZF	Ceramic	50V 0.0047	1 -	
C3048	ECCZ1H560K	Ceramic 50V		1		C8004	ECKZ1H681KB	Ceramic	50V 680P	1	
C3049	ECCZ1H181K	Ceramic 50V	180P	1		C8005	ECCZ1H080CC	Ceramic		-	
23050	ECKZ1H103ZV	Ceramic 50V	0.01	1		C8006	ECV1ZW20X53N	Trimmer			
03051	ECKZ1H681KB	Ceramic 50V	680P	1		C8008	ECEA1H010		20P	1 1	
3052	ECCZ1H101K	Ceramic 50V	100P	1		C8009		Electrolytic	50V 1		
		301	- 701			-00007	ECKZ1H103ZV	Ceramic	50V 0.01	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
C8010	ECEA1CK100	Electrolytic 16V 10	Set 1				Delay Lines	Jet	
C8011	ECKZ1H472ZF	Ceramic 50V 0.0047	1		DL3001	EFDKL645A12A o	L		1
C8012	ECEA1HK2R2	Electrolytic 50V 2.2	1		DESCO	VLD0030			
C8012	ECEA1CK100				DL8001	EFDKR645B85A o			1
C8013	ECCZ1H470K	Electrolytic 16V 10 Ceramic 50V 47P	1		DE0001	VLD0029	<u> </u>		
		4	1			VED0023			
C8015,8016	ECEA1AK330	Electrolytic 10V 33	2						
C8017	ECEA1HK010	Electrolytic 50V 1	1						
C8018	VCYW1H104JS	Ceramic 50V 0.1	1						
C8019,8020	ECEA1CK100	Electrolytic 16V 10	2				Pin Headers		
C8021	ECEA1HK010	Electrolytic 50V 1	1		Pl	VJPS0033	2P	1	
C8022	ECCZ1H820K	Ceramic 50V 82P	1		P2	VJPS0043	12P	1	
					P3	VJPS0037	6P	1	
					P4,5	VJPS0041	10P	2	
					P6	VJPS0036	5P	1	
		Coils			P7-10	VJPS0039	8P	4	
L1001-1003	VLQ0085		3		P11	VJPS0033	2P	1	
L1004-1006	VLQ0084		3		P12	VJPS0034	3P	1	
L1007	VLQ0083		1		P13	VJPS0041	10P	1	
L2001	VLQEL05R101K	100µН	1		P14	VJP1141	2P	1	
L2002	VLQELO5R220K	22µН	1	:	P15	VJPS0039	8P	1	
L2002	VLQELO5R3R9K				P16,17	VJPS0033	2P	2	
		3.9µH	2		P10,17	VJPS0033		1	
L3001-3003	VLQELO5R101K	100µH	3		the second of the second		6P		
L3004	VLQELO5R180K	184Н	. 1		P20	VJPS0036	5P	1	
L3005	VLQEL05R3R9K	3.9µH	1						
L3006	VLQEL05R101K	100µН	_1_						
L3007	VLQEL05R270K	27µн	1		 				
L3008	VLQS66F102K	1mH	1			:			
L3009	VLQEL05R470K	470µH	1						
L3010	VLQEL05R100K	10µн	1				Crystal Oscillators		
L3011	VLQEL05R101K	100µн	l		X2001	VSX0086		1	
L3012	VLQS66F471K	470µH	1		X8001	VSX0085		1	
L3014-3017	VLQEL05R101K	100µН	4		1	****			
13019,3020	VLQELO5R3R9K	3.9µН	2				·········		
L4001	VLQFL06L222J	2.2mH	1						
L4002	VLQS66F101K	100µH	1		1				
L4002	VLQS66F101K		1			1	Fuse	†	
L4004	VLQFL06L682J	6.8mH	1		F1001	XBA1C05NU100	0.5A	1	
L6501	VLQEL05R101K	100µH	1	<u> </u>	F6501	XBA1C25NU100	2,5A	1	
L8001	VLQEL05R680K	68µH	1				1	+	
L8002	VLQEL05R000K	47µH	1						
L8003	VLQEL05R390K	39µH	1						
L8004	VLQFL05R390K VLQFL06R682J	6.8mH					Relay		de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la
L8004			1		PV6/03	Vevenone	Relay		
	VLQELO5R330K	33µH	1		RY6401	VSYS0006			
L8006	VLQEL05R101K	100µH	1		RY6501	AG29001	***************************************		
L8007	VLQS66F221K	2201H	. 1				and the second of the second o		
							Transformer		
					T4001	ELM7Q207E	Detector	1	
						1			
		Filters		v			to the advantage of the second control of th		
FL3001	VLF0135		1				· · · · · · · · · · · · · · · · · · ·		
FL3002	VLF0168		1				Miscellaneous		
FL3003,3004	VLF0167		2			TJC6320	Fuse Holder	4	The state of the s
FL3005	VLF0136		1		 	VEJS0011	Jack	1	
FL8001	VLF0156	For the American Commission Commi			 	VKC0052			
FL8002	VLF0159 VLF0158					VKC0052	Hinge A	- 4 +	
1 10002	APLAIDA	*	1			er frances - care and a care	Hinge B	Ź:	
					· · ·	VMZS0059	Head Amp Insulator Sheet	1 :	
<u> </u>	-	·			ļi	VMZS0060	Power Insulator Sheet	+	
	-				l	VSCS0129	Head Amp Shield Case	1	
	÷					VSCS0130	Head Amp Shield Case	1	
						VSCS0131	Head Amp Shield Case	. 1	
						VSCS0132	Power Shield Case	1	
						VSCS0133	Power Shield Case	1	
-		1				VSCS0134	Power Shield Case	1	
	:							1	
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Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pes / Set	Remarks
		System Control & Memory			R6033,6034	ERDS2TJ562	1/4W 5.6K	2	1
		Counter C.B.A.			R6037-6039	ERDS2TG1003	1/4W 100K	3	
					R6040	ERDS2TG2003	1/4W 200K	1	
		,	!		R6041	ERDS2TJ123	1/4W 12K	1	
		Integrated Circuits			R6042	ERDS2TJ222	1/4W 2.2K	1	
IC6001	µPD7502G−063	-	1		R6043-6045	ERDS2TJ223	1/4W 22K	1	
1C6002	MN1455AVA	i	1		R6046	ERDS2TJ563	1/4W 56K	1	
IC6003	MN1455AVB		1		R6047	ERDS2TJ153	1/4W 15K	1	
IC6004,6005	µPD4503BC		2		R6048	ERDS2TJ103	1/4W 10K	1	-
IC6006	µPC393C		1	7 / /	R6050	ERDS2TJ223	1/4W 22K	1	
					R6051,6052	ERDS2TJ103	1/4W 10K	2	T**
					R6053	ERDS2TJ105	1/4W 1M	1	
		Transistors			R6054	ERDS2TJ104	1/4W 100K	1	
Q6001-6008	2SB641(Q,R,S)		8		R6055	ERDS2TJ332	1/4W 33K	. 1	
Q6009	2SD636(Q,R,S)		1		R6056	ERDS2TJ271	1/4W 270	1	
Q6010	2SD637(Q,R,S)		1	W/	R6057	ERDS2TJ223	1/4W 22K	1	†
Q6011	2SD636(Q,R,S)	:	1	·-··	R6058	ERDS2TJ823	1/4W 82K	1	
06012	2SD637(Q,R,S)		1	****	R6059	ERDS2TJ223			
26013,6014	2SB641(Q,R,S)		2				1/4W 22K	1	
Q6015,6016					R6060	ERDS2TJ124	1/4W 120K	1	
Q6017	2SD636(Q,R,S)		2		R6061	ERDS2TJ223	1/4W 22K	1	
	2SB641(Q,R,S)		1		R6062	ERDS2TJ823	1/4W 82K	1	!
26018	2SD636(Q,R,S)		1		R6063	ERDS2TJ223	1/4W 22K	1	
Q6019	2SD992		1	10.70	R6064	ERDS2TJ682	1/4W 6.8K	1	
26020-6022	2SD636(Q,R,S)	<u> </u>	3		R6065	ERDS2TJ563	1/4W 56K	1	
Q6023	2SB641(Q,R,S)		1		R6066,6067	ERDS2TJ103	1/4W 10K	2	
Q6024	2SC2594		1		R6068	ERDS2TJ221	1/4W 220	1	
Q6025,6026	2SD636(Q,R,S)		2		R6069	ERDS2TJ103	1/4W 10K	1	
26027	2SB641(Q,R,S)		1		R6070-6072	ERDS2TJ104	1/4W 100K	3	
26028	2SD636(Q,R,S)		1		R6073	ERDS2TJ224	1/4W 220K	1	· · · · · · · · · · · · · · · · · · ·
26029	2SB641(Q,R,S)		1		R6074	ERDS2TJ104	1/4W 100K	1	
26030	2SD638(Q,R,S)		1		R6075,6076	ERDS2TJ103	1/4W 10K	2	
26031-6035	2SB641(Q,R,S)		5		R6077,6078	ERDS2TJ563		2	
26036,6037	2SD636(Q,R,S)		2 ,		R6079	ERDS2TJ103			:
26039,6040	2SD636(Q,R,S)		2		1		1/4W 10K	1_	
26041	2SD637(Q,R,S)			****	R6080	ERDS2TJ333	1/4W 33K	1	
20041	230037(Q,R,S)	Diodes	_1_		R6081 R6082,6083	ERDS2TJ561 ERDS2TJ563	1/4W 560 1/4W 56K	1	
06001-6007	LN28CA1	L.E.D.	7		R6084	ERDS2TJ103		2	
06008	MA27WA		1		R6085	-	1/4W 10K	1	
06009-6022	MA165		14		-	ERDS2TJ333	1/4W 33K	1	
06023	EM1Z				R6086	ERDS2TJ560	1/4W 56	1	
06024-6030	MA165	!	1	Control of the Contro	R6087	ERDS2TJ273	1/4W 27K	1	
6031			7		R6088	EVN3ACA00B14	Variable 10K	1	
6033-6038	LN28CAL	L.E.D.	1		R6089	ERDS2TJ563	1/4W 56K	1	
6033-6038	MA165		6		R6090	ERDS2TJ223	1/4W 22K	1	
	-				R6091	ERDS2TG2202	1/4W 22K	1	
					R6092	ERDS2TG1003	1/4W 100K	1	
					R6093	ERDS2TG1803	1/4W 180K	1	
					R6094	ERDS2TG4703	1/4W 470K	1	The state of the s
					R6095	ERDS2TJ564	1/4W 560K	1	
		Resistors			R6096	ERDS2TJ223	1/4W 22K	1	
6001	ERDS2TJ561	1/4W 560	1		R6097	ERDS2TJ334	1/4W 330K	1	
6002-6005	ERDS2TJ223	1/4W` 22K;	4		R6098	ERDS2TJ123	1/4W 12K	1	
6006	ERDS2TJ821	1/4W 820	1		R6099	ERDS2TJ104	1/4W 100K	1	
6007,6008	ERDS2TJ223	1/4W 22K	2		R6100	ERDS2TJ103			
6009	ERDS2TJ103	1/4W 10K	1		R6101			1	
6010,6011	ERDS2TJ223	1/4W 22K	2			ERDS2TJ223	1/4W 22K	1	
6012	ERDS2TJ561				R6102	ERDS2TJ473	1/4W 47K	1	
5013			1		R6103	ERDS2TJ103	1/4W 10K	1	
014	ERDS2TJ223	1/4W 22K	1		R6104	ERDS2TJ223	1/4W 22K	1	
	ERDS2TJ561	I/4W 560	1		R6105	ERDS2TJ473	1/4W 47K	1	A AFRICA
5015	ERDS2TJ223	1/4W 22K	1		R6106,6107	ERDS2TJ104	1/4W 100K	2	
016,6017	ERDS2TJ563	1/4W 56K	2		R6108	ERDS2TJ472	1/4W 4.7K	1	
5018	ERDS2TJ223	1/4W 22K	1		R6109	ERDS2TJ222	1/4W 2.2K	1	
019	ERDS2TJ473	1/4W 47K	1		R6110	ERDS2TJ103	1/4W 10K	1	
	ERDS2TJ223	1/4W 22K	1		R6111	ERDS2TJ222	1/4W 2.2K	1	
020	ERDS2TJ331	1/4W 330	1		R6112-6115	ERDS2TJ223	1/4W 22K	4	
			2		R6116	ERDS2TJ103	1/4W 10K	1	
022	ERDS2TJ563	1/4W 56K	3						
6020 6022 6023-6025	ERDS2TJ563		-+					-	
6022 6023–6025 6026	ERDS2TJ563 ERDS2TJ123	1/4W 12K	1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	R6119-6124	ERDS2TJ223	1/4W 22K	6	
6022 6023-6025 6026 6027-6029	ERDS2TJ563 ERDS2TJ123 ERDS2TJ104	1/4W 12K 1/4W 100K	1 3		R6119-6124 R6125	ERDS2TJ223 ERDS2TJ103	1/4W 22K 1/4W 10K	6	
022 023–6025 026	ERDS2TJ563 ERDS2TJ123	1/4W 12K	1		R6119-6124	ERDS2TJ223	1/4W 22K	6	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
R6129,6130	ERDS2TJ104	1/4W 100K	2				Capstan Motor Drive C.B.A.		
R6131	ERDS2TJ562	1/4W 5.6K	1						-
R6132	ERDS2TJ104	1/4W 100K	1						
R6133	ERDS2TJ223	1/4W 22K	1				Integrated Circuits		
86134,6135	ERDS2TJ563	1/4W 56K	2		TC2601	VEFSS001		1	
R6136	ERDS2TJ103	1/4W 10K	1		IC2602	AN6676		1	
R6137,6138	ERDS2TJ223	1/4W 22K	2						
86139,6140	ERDS2TJ563	1/4W 56K	2					-	
R6143	ERDS2TJ332	1/4W 3.3K	1				Transistors	_	
R6144-6148	ERDS2TJ151	1/4W 150	5		Q2601-2603	2SB819(P,Q)		3	
R6149	ERDS2TJ682	1/4W 6.8K	1		1			+	
R6150	ERDS2TJ270	1/4W 27	1					-	
			-		1		Resistors		
					R2601	ERX12ANJR56	Metal Oxide 1/2W 0.56	1	
					R2602	ERDS2TJ392	1/4W 3.9K	1	
					R2603-2605	ERDS2TJ270	1/4W 3.9K	3	
					K2603-2603	EKD521J270	1/4w 2/	3	
					 				
(001	F071 1 1 7 7 1 0 1 0	Capacitors	_		-		-		
6001	ECEA1HKL010	Eelctrolytic 50V 1	1		1		Capacitors		
6002,6003	ECKF1H221KB	Ceramic 50V 220P	2		C2601	ECEA1HKR1	Electrolytic 50V 0.1	1	
6004-6006	ECKF1H102KB	Ceramic 50V 0,001	3		C2602	ECEA1CK330	Electrolytic 16V 33	1	
26007	ECKF1H103ZV	Ceramic 50V 0.01	1		C2603	ECEA1CK470	Electrolytic 16V 47	1	
26008	ECEA1HK010	Electrolytic 50V 1	1		C2604-2606	ECEA1HK010	Electrolytic 50V 1	3	
26009-6011	ECKF1H103ZV	Ceramic 50V 0.01	3						
6012,6013	ECKF1H561KB	Ceramic 50V 560P	2						
26014	ECKF1H103ZV	Ceramic 50V 0.01	1				Pin Header		
6015	ECEAOJK470	Electrolytic 6.3V 47	1		P31	VJPS0041	10P	1	
26016	ECEA1HK010	Electrolytic 50V 1	1						
6018	ECKF1H102KB	Celamic 50V 0.001	1				i		
6021	ECKF1H472ZF	Ceramic 50V 0.0047	1						
6023	ECEAOJK220	Electrolytic 6.3V 22	1					_	
6024	ECEA1EK4R7	Electrolytic 25V 4.7	1						
		7							
								-	
		Pin Headers	_		1	-	Miscellaneous		.4.0
221-24	VJPS0050	8P	4		1	VJBS00191	Flexible Wires	1	
225	VJPS0035	4P	1		l	VMXS0091	Drive Spacer	1	
226	VJPS0034	3P	1			VWJS0001	Flex Strip Jumper		
227	VJPS0041	10P	1		l	V#330001	riex Stilp Jumper	1	
228	VJPS0036	5P	1						
229	VJPS0037	6P							
30	VJPS0041		1		ļ				
30	V3F30041	10P	1						
	-								
	-								
-									
	-	Switches							
W6001-6011	EVQ-QS107K	Push Switch	11						
W6012	ESD14185	Select Switch	1						
W6013	ESD14184	Camera Remote Switch	1						
W6014	EMR-2512	Power Switch	1						
		Miscellaneous							
	KL02	Spacer	8				170.00		
	VEKS0803	Riquid Crystal Display	1					-	
		Counter Ass'y						+	
	VJBS00175	Riquid Crystal Display	1			-		-	
		Counter P.C.B.	-		-			+	
	VMDS0072	Counter Holder	1		F	-		-	
	VMXS0072							_	
		Counter Spacer	1			-		-	
	VSQS0129	Conductive Rubber	1		-				
	VSZS0007	Riquid Crystal Display	1						
		Counter							
								+	
					-	-			

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Por / Set	P-manh-
		Cylinder Motor Drive					Full Erase Head C.B.A.		
		C.B.A.	_						
					i				
	·	Integrated Circuit			0/550		Transistor		
C2501	AN6387	integrated Circuit	1		Q4553	2SD636(P,Q,R)		1	
102301	ANO 30 /		1						
		,						_	
	1	Transistors			R4553	EDDCOM 1222	Resistor		
Q2023-2025	2SD636(Q,R,S)	TIANSISTOIS	3		K4555	ERDS2TJ333	1/4W 33F	1	
Q2023 2023	200030(Q,R,3)		3					_	
	-						0	ļ.,	
		Diodes			C4551	ECEA1CK100	Capacitors	Ι.	
D2006-2008	MA165	210003	3		C4555	ECEMIHI53KZ	Electrolytic 15V 10 Polyester 50V 0.015		
D2501	MA165		1		C4556	ECKF1H472ZFV	Ceramic 50V 0.0047	1	
					C4557	ECWM1H333KZ	Polyseter 50V 0.0047		
					C4337	ECWATHOOSE	rolysetel 30V 0.033	1	
		Resistors						-	
2088	ERDS2TJ105	1/4W 1M	1				Pin Header	-	
R2089	ERDS2TJ104	1/4W 100K	1		P48	VJPS0033			
R2090,2091	ERDS2TJ223	1/4W 100K	2		140	1010003	2F	1	
R2092	ERDS2TJ103	1/4W 10K	1					-	
R2093	ERDS2TJ184	1/4W 180K	1				Transformer		
R2094	EVN3ACA00B15	Variable 100K	1		T4551	ELM7Q011E	Detector	1	
R2095	ERDS2TJ104	1/4W 100K	1		14331	ELLITQUITE	Detector	1	
R2096	ERDS2TJ153	1/4W 15K	1					-	
R2501	ERDS2TJ124	1/4W 120K	1					-	
32502	ERX12ANJR56	Metal Oxide 1/2W 0.56	1			 			1
2503	ERDS2TJ104	1/4W 100K	1					-	
R2504	ERDS2TG3902	1/4W 39K	1						
2505	ERDS2TG1502	1/4W 15K	1		-				-
R2506-2508	ERDS2TJ470	1/4W 47	3					-	
								-	
							***	-	
		-	-						
		Capacitors					Sub System Control C.B.A.	_	
2049	ECKZ1H102ZF	Ceramic 50V 0.001	1						
2050	ECSF16ER15K	Tanalum 16V 0.15	1						
2501	ECEAICK470	Electrolytic 16V 47	1				Integrated Ciruit		
2502	ECWM1H123KZ	Polyester 50V 0.012	1		IC6554	μPD4528BC		1	
2503	ECKF1H472FV	Ceramic 50V 0.0047	1						
2504	ECWM1H682KZ	Polyester 50V 0.0068	1						
2505	ECEA1EK3R3	Electrolytic 25V 3.3	1				Transistor		
2506	ECSF16ER22K	Tantalum 16V 0.22	1		Q6553	2SD636(Q,R)		1	
2507	ECKZ1H102KB	Ceramic 50V 0.001	1						
2508	ECEA1CK470	Electrolytic 16V 47	1						
2509-2511	ECEA1HN2R2	Electrolytic 50V 2.2	3				Diodes		
					D6553,6554	MA165		2	
		Miscellaneous	-				Resistors		
	VMXS0031	Spring	3		R6552	ERX12ANJ3R9	Metal Oxide 1/2W 3.9	1	
		***************************************			R6555	ERDS2TJ105	1/4W 1M	1	
	-				R6556	ERDS2TJ224	1/4W 220K	1	
			- 1		R6557,6558	ERDS2TJ104	1/4W 100K	2	
			_		R6559	ERDS2TJ334	1/4W 330K	1	
					R6560	ERDS2TJ104	1/4W 100K	1	
	<u> </u>				R6561	ERDS2TJ224	1/4W 220K	1	
	-								
	i						Capacitors		
			-		C6551	ECEA1CV682Z	Electrolytic 16V 6800	1	
			_		C6552-6554	EECW1R8A1	Gold Capacitor 1.8V 1	3	
					C6555	ECSF16V10K	Tantalum 16V 10	1	
		_			C6556		Tantalum 16V 1	1	
		740	- /						
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Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
-		Pin Headers			1	-	Takeup Reel Detector	+	
34-37	VJPS0033	2P	4				C.B.A.	_	
238	VJPS0035	4P	1						
P49	VJPS0036	5P			\dashv			-	
49	V3F30036	31.					Integrated Circuits	-	
					701552 1552	01/01/0	Integrated Circuits	-	
-					IC1552,1553	ON2160		2	
						1	Pin Header		
					P42	VJPS0046	41	1	
				17.07					
1							Miscellaneous		
	707	-	-		1	VJBS00173	Takeup Reel Detector	i	
			+		1	-	P.C.B.		
						100100001		-	
						VMXS0081	Sensor Spacer	2	
			-		1			-	
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W 44		Supply Reel Detector					Takeup Photo TR C.B.A.		
		C.B.A.							
							Transistor		
					Q1551	PN150NV		1	
		Integrated Circuit						,	
IC1551	ON2160		1				:		
	-		-		-		Pin Header	+	
					P40	VJPS0033	21	1	
		Pin Header	-		1			-	
P39	UIDCOORE				-		1	-	
	VJPS0035	4P	1			-		-	
	+		į	. (1834).			Miscellaneous		
						VJBS00169	Takeup Photo TR P.C.B.	1	
		Miscellaneous							
	VJBS00174		1						
		P.C.B.							
	VMXS0081	Sensor Spacer	1					.	
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Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
	 	Supply Photo TR C.B.A.	Set	
** NO.				
			-	
		Transistor	1	
Q1552	PN150NV	Photo Transistor	1	
			-	
		Pin Header		
P41	VJPS0034	3P	-	
F41	VJF80034	34	1	
		Miscellaneous		
	VJBS00170	Supply Photo TR P.C.B.	1	
-		Safety Tab Switch C.B.A.		
		Tartey las owicen c.b.a.	-	
	1			
		Pin Handar		
50	V 1000033	Pin Header		
	VJPS0033	2P	1	
	1			
-				
		Switch		
W1555	VSH0017	Safety Tab Switch	1	
	-			
		Miscellaneous	i	
	VJBS00206	Safety Tab Switch P.C.B	1	
	VMZS0066	Insulator Sheet	1	
			-	
-	T:	ELECTRICAL PARTS LOCATED		
		ON CHASSIS	-	
	<u> </u>	on diagoto		
		1		
	VSCS0165	Converter Shield Case	1	110
	VSCS0166	Converter Shield Case	1	
	ENC16501	RF Converter	1	
	TJE98102	Check Terminal	3	
	VEKS0775	Dew Sensor Ass'y	1	
	VEKS0801	Camera Jack Ass'y	1	
	VEKS0802	Multi Pull Jack Ass'y	1	
	VJBS00172	F.G Head P.C.B.	1	*
	VJES0003		31	
	VJES0003	Check Terminal		
	XTV26+6J		3	
553		Tapping Screw, 2.6x6	2	
501	ERZ-C03DK220	Diode Zener	1	
	VJSS0031	5P Jack	1	
553	EVLEHAT12B25	Resistor Variable 200K	1	
		Slow Tracking		
1501,1502	VSH0016	Leaf Switch	2	
	1			
	+		-	
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Ref. No.	Part No.	Part Name 8		Pcs / Set	Remarks	
		Transmitter C	.B.A.			
ICI	2011 / FO 1110	Integrated Ci	rcuit	_		
101	MN1453AWR				1	
				-		
		Diode			+	
D16	OA90G				1	
R13	EDD2571601	Resistors	1.11			
VR1	EVNB4A00B53		1/4W	680	1	
VKI	EVNB4AUUB53	Variable		5K	1	
					-	
		Capacitors				
C1	ECEA1CK470	Electrolytic	16V	47	1	
C2	ECEA1HK2R2	Electrolytic	50V	2.2	1	
C3	ECCF1H390JU	Ceramic	50V	39P	1	
C4	ECKF1H221KB	Ceramic	50V	220	1	
		Miscellaneous				
	MU16VPB3-A	Transmitter P.	0 P		,	
	HOTOVI B3-K	Transmitter P.	С.Б.		1	
	1				-	
		1				
				-	-	
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